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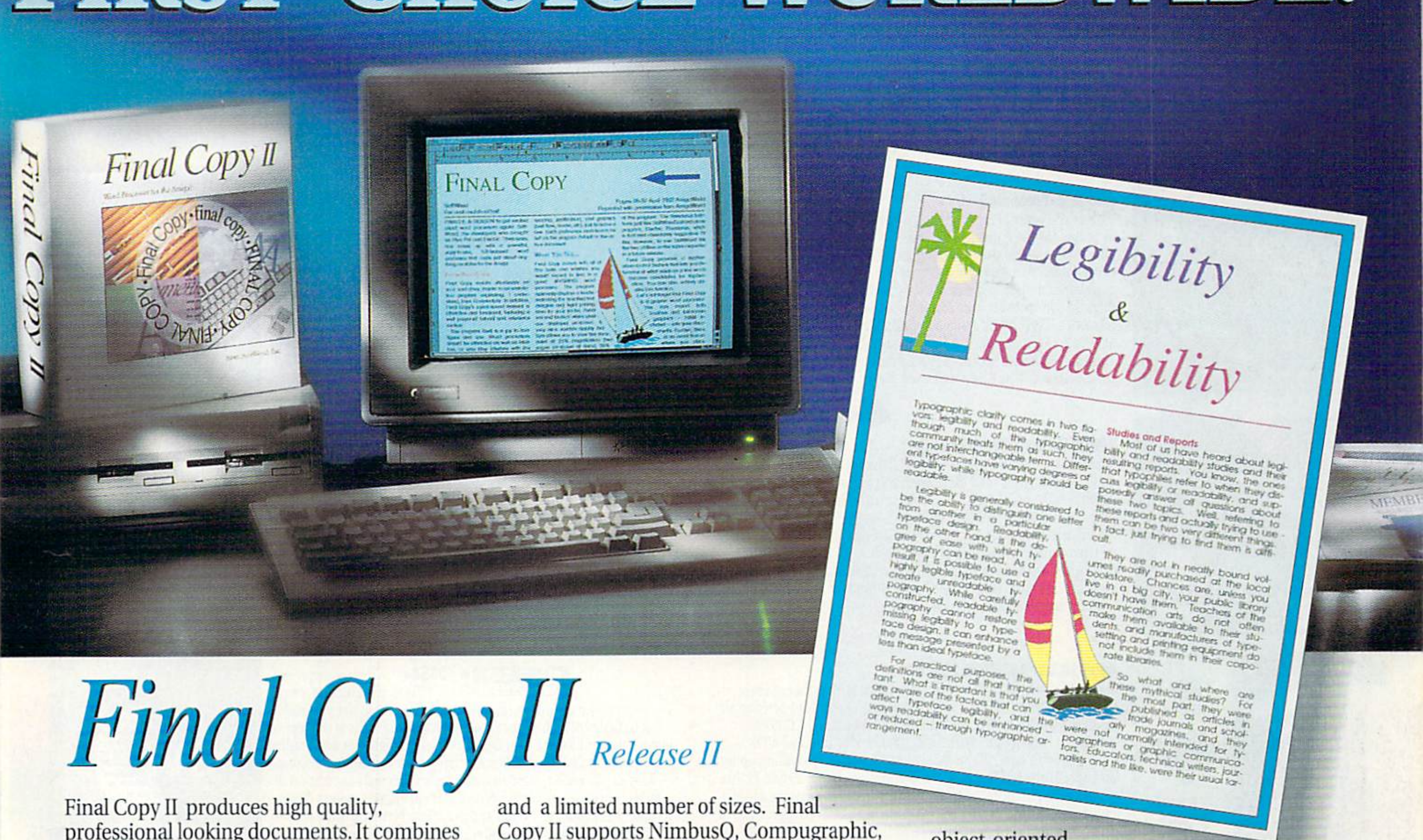
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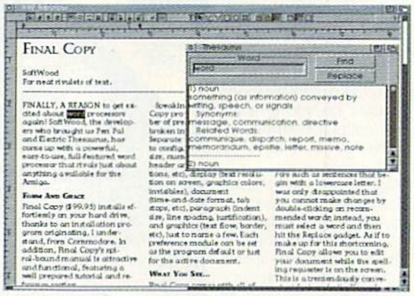
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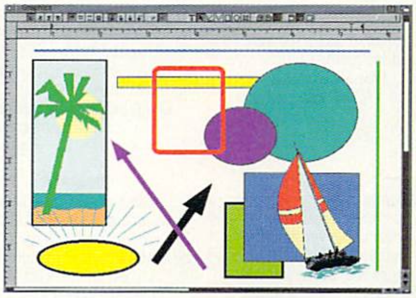
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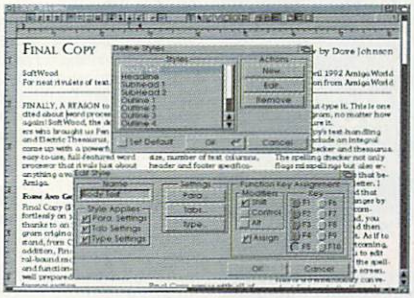
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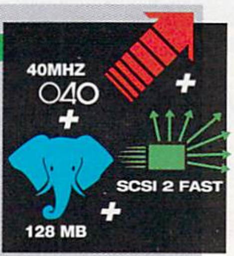
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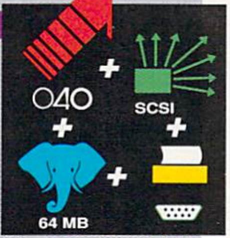
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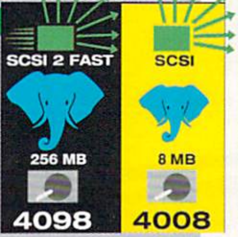


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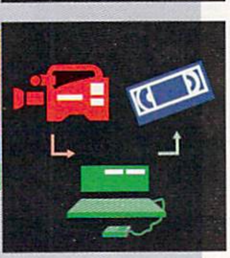
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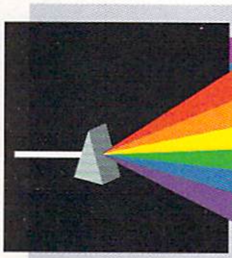
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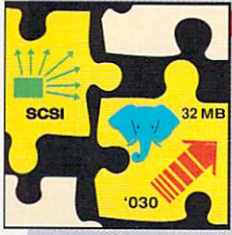
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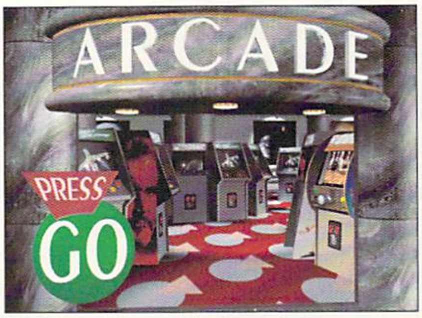
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VOLUME 10, NUMBER 3, MARCH 1994

FEATURES

ARTICLES

COLUMNS



The Amiga's most famous third-party product can whip up some super special effects. Try your hand—with a little expert hand-holding from us—at using the features of Toaster 3.0. Cover credits: "Sports Car/Jet" image by Dave Thomas; "Earth and Sun" and "Arcade" by Erik Flom, "Arcade" ©1993 ICTV; all images created with LightWave. Cover background image by FPG International.

DEPARTMENTS

REVIEWS

GAMES

By Peter Olafson

EDITOR'S DRAWER

Here are some marketing suggestions for ...Commodore's launch of CD32 from an unabashed games fanatic.

The Top Ten

I have a little confession to make: I like to play computer games, so I'm rooting for Commodore to make a big splash in the games market with the CD32. I've developed the following ten steps for marketing the machine. My advice is free (and probably worth every cent!).

1. Commodore marketing—an oxymoron? Any long-suffering Amiga owner will tell you: Commodore desperately needs to boost its marketing efforts. CBM recently hired PR consultant Ron Peterson to spearhead CD32 promotion—a step in the right direction. Peterson, Commodore US general manager Geoff Stilley, and marketing manager John Dilullo recently revealed tentative plans that include TV infomercials, mailings, and competitive software development and advertising. It's about time.

2. Warm and fuzzy. Develop a character that becomes identifiable with great game play on CD32. Nintendo has the Mario Bros., and Sega boasts Sonic the Hedgehog. Commodore has...Zool?

3. Get some ink! Game machines translate into headlines nowadays, so why shouldn't Commodore share some of the spotlight with Atari Jaguar and 3DO?

4. 32 what? Sell the benefits, not the technical stuff. Better graphics, speed and memory, rather than bits, megahertz, and megabyte capacities.

5. Keep in touch. Re-establish a strong network—of dealers, retailers, and users—and keep it informed about product development and availability.

6. Quality, not quantity. You can dazzle 'em with numbers, but for a lasting impression, emphasize quality. New titles should take advantage of the strengths of the machine. Strive for new standards of excellence in game design and development.

7. Cash in on the craze. Any Mortal Kombat fan will tell you that this year's games sales were at an all-time high. What better time for Commodore to push its product into the limelight? Commodore needs to move quickly to garner a significant share of this market.

8. The Ugly American syndrome. The shrinking US market is last on the list of CD32 release locations, primarily owing to the fact that the machine has done so well elsewhere. CBM needs to revitalize its US market.

9. For non-gamers, too. You may be asking, "If I'm not a games player, why should I care?" CD32 may bring new users to the Amiga market. With a successful CD32 launch, Commodore is in a much stronger financial position to introduce new products.

10. It takes a thief. Commodore needs to steal the thunder of giants Nintendo and Sega. CBM certainly has the technology to compete, but it's up to manufacturing, marketing, and third-party developers. With the price lower than the competition it's possible to overtake the market.

Dennis Brisson/Editor-in-Chief

AmigaWorld

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HELP KEY

Tim "the Toolman" takes a look back at the A2090A and offers a refresher on how to create autobooting disks.

By Tim Walsh

A2090A Dis(k)aster

Q. My A2000 is equipped with an AmigaDOS 2.04 ROM and its accompanying software. The HDTools program on my system does not seem to detect my 50MB Rodine RO-3055 hard drive or my Commodore A2090A controller. Must I upgrade the hard-drive controller?

Also, I'm considering getting an A1200. Is it possible to use my external 213MB Maxtor IDE-type hard drive with it? If not, can I install the Maxtor on the A2000?

Ethan Vaughn
Ogden, Utah

A. The A2090A sounds like the culprit. I consulted with several hard-drive experts who proposed two options. You can scrap the controller and replace it with a newer, more up-to-date unit. Alternately, with some fiddling and luck, you can devise a new "HDTools" of sorts to get your 2.04-equipped A2000 to recognize the controller.

The first choice requires nothing more than picking up the phone and calling some Amiga dealers and mail-order houses for prices.

If you opt for the less-expensive plan, the experts suggest that you find a copy of the original A2090A Install software. While antiquated by today's standards, the A2090A apparently involves a complicated setup—it was an update of the nonautobooting A2090. As such, it needs an autobooting Boot partition that uses the FastFileSystem, and at least one other partition that requires the original file-system format. After conducting a fruitless search for a source of an old (circa 1988) set of A2090A Install disks, I turned to the public domain and quickly located several comparable programs; these are available in Amiga disk collections and on networks and BBSs.

The first step in the process is to get a good hard-disk partitioning utility. The freely distributable RDPrep package from MicroBotics is a good choice. Not a formatting utility, RDPrep is an all-purpose Rigid Disk Block hard-drive partitioning program. It's crucial that you have such a utility for the configuration process, as some versions of the A2090A/B controllers required three (Boot, Workbench, and Work) partitions on the hard disk. The program comes with extensive documentation, including information on setting it up to recognize most Amiga hard drives.

Next, you'll need a good formatting program, one with more flexibility than the stock 2.04 Format command. Again, in the public domain, Olaf Barthel's Format program can replace the existing command. With it in place, a screen with a multitude of options appears on a command panel when you select an icon and the Format Disk option from the 2.04 Workbench. Another freely distributable formatting utility to try is Bob Bush's BFormat, a program guaranteed to format any device with the file system of your choice.

If all else fails, and you have no access to the above programs—and after you've backed up every last byte and bit of data worth saving on the hard drive—try a quick prep that will clear everything from the hard drive. Open a Shell window and type:

```
Format DRIVE (partition): name Work QUICK
```

The hard drive's icon should indicate that it is busy for a few seconds; then, if the drive has been previously formatted (it sounds as though yours has been), you should be able to save files to it. Just try dragging a few files from the Workbench. If they copy successfully, try a low-level format by using the above sequence again, but without the QUICK command at the end.

Finally, you'll need to devote a portion of the drive to an autobooting partition (see the following question) and insert the FFS designation in the above Format statement between the words (partition): and name. With Workbench 2.04 on the hard drive, the startup.sequence.HD located in the s directory of 2.04 might be suitable for autobooting the drive.

As for your use of the IDE-type drive with the A1200, you're all set—it has a built-in IDE interface. On the A2000, any Zorro-II controller offering an IDE port (such as Expansion Systems' DataFlyer 2000 or ICD's AdIDE 2) paired with an IDE-type cable will allow you to use the Maxtor as an external drive. Partitioning and formatting the IDE drive is no more difficult (or easy) than setting up any other hard drive.

These Disks Were Made for Booting

Q. How do I make an Amiga disk self-booting? Must I store a program in a particular location on the disk to accomplish it?

Clyde Corson
Lawndale, California

A. I've addressed this question before, but the answer bears repeating. The position of the files on the disk makes no difference. For Workbench 1.3, 2.x, or 3.0, just make sure you have the minimum requirements, such as the s directory for a startup-sequence, and any of the files that are called by the startup-sequence (C, System, Prefs, and so on). Then, with the disk in the drive, type the following:

```
INSTALL df0:
```

That's it. Now you will have a disk that will, when placed in drive df0:, boot the computer after a reset or cold start. This process also works with some autobooting hard disks. ■

Get anwers to your own questions by writing to Help Key, ***AmigaWorld*** *Editorial, 80 Elm St., Peterborough, NH 03458.*

OVERSCAN

News, New Products and Networks

WORLD OF COMMODORE—TORONTO

Three months after its US debut, and five months after it was introduced in Europe and Australia, the **CD32** was launched in Toronto, the city where the Commodore phenomenon began. Expectations for this product soared as high as the CN Tower, and the crowds at the show were not disappointed. Enthusiastic attendees could pick up a number of show bargains, including the CD32 game unit, at one of several dealers' and retailers' booths.

GAMES GALORE

There were plenty of opportunities to get a feel for the newest game system. If you didn't win one at the Commodore-sponsored CD32 drawing, then you could at least sample it in action first-hand at one of the many game stations that lined the show floor. Two arcade sections—courtesy of host ***Commodore*** (RS# 120) and giant North American distributor, ***BMD*** (British Magazine Distributors)—allowed thousands to get a peek at this exciting new game machine. The duo displayed a number of CD32 titles from European developers such as Mindscape, Millennium, Gremlin, Krisalis, Virgin, Flair, 21st Century, and Ocean. The games attracted both young and old and included titles such as Pinball Fantasies, Sleepwalker, Robocod, Zool, Oscar, Whale Voyage, Nigel Mansell, Arabian Nights, and Johny Barnes European Football.

Initially, a promissory note will be included with the unit, which entitles you to two game titles. In the future, games will be bundled with the package. According to Commodore, NTSC versions of the game machine are available only in very limited quantities in North America; expect the supply to become more plentiful after the beginning of the year and especially after the January rollout at the Consumer Electronics Show. However, you could take a CD32 unit home with you from the show for $499 Canadian (which translates to under $400 US).

LEW SPEAKS

In a keynote speech to a packed auditorium, Commodore Engineering VP, Lew Eggebrecht, attributed much of the machine's initial sales success overseas to its low price, hardware design, software availability, and MPEG option. Unlike its predecessor, the CDTV, it does not suffer from high price and lack of application focus.

Commodore is working with overseas developers and distributors to get PAL-converted NTSC titles into the market. With 120 licensees developing titles, "we should see a flood of software soon," noted Eggebrecht.

He demonstrated CD32's impressive VCR-like capabilities—stills, slow-motion playback, fast forward—with the MPEG option. Two video titles—Top Gun and Star Trek VI (demonstrated at the show)—are available to run with the MPEG modules, which, Eggebrecht noted, are in production, but are initially slated for release only in Europe.

TECH PROSPECTS

Without being specific about release dates (a marketing question, after all), Eggebrecht also discussed future Amiga tech developments, including the AAA chip set, the 4000 Tower, a cost-reduced A4000 featuring a new design, and a Photo CD licensing agreement with Philips.

Commodore has endorsed the PCI bus standard (to better take advantage of future high-speed peripheral connections) for the AAA machine. Plans call for the first AAA machines to ship with the Motorola 68060 processors, contingent upon Motorola's ability to supply the necessary silicon development. To upgrade to a RISC (Reduced Instruction Set Computing) processor, you would plug in a RISC CPU module. Since the design of the AAA chip set is such a radical departure, it is unlikely that you could make it compatible with older machines. The new AAA machine could be available as early as 1995. Commodore has been rehiring personnel and restaffing its software and hardware operations to support AAA, according to Eggebrecht.

The 4000 Tower machine, which CBM is "pushing to get out," is an AGA machine with built-in SCSI-2 support. It features additional slots, two hard drive controllers, AGA, and two video slots.

In other developments, Eggebrecht noted that CD-ROM drives for the A1200 and A4000 (the A4000 version would contain the MPEG module) may be available in early spring. Finally, he hinted that beyond the AAA machine, Commodore is looking at product development to support real-time 3-D rendering.

ATTENTION, SHOPPERS

As always, the WOC Toronto provided a vast array of hardware and software alike for holiday shoppers. At the large ***Scala*** booth a wall of video monitors and pulsating music drew curious show-go- ►

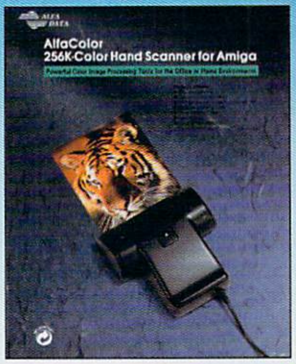


OVERHEARD

The **ImageFX Arts and Sciences Contest**, co-sponsored by ***GVP*** and ***Nova Design***, will award the best in new and original art, animation, and programming. The deadline is March 1 and results will be announced at the World of Commodore show in April. Contest rules are available on CompuServe in the GVP section of the Amiga Vendor Forum and by calling GVP at 215/351-9195.

To locate the vendors of products mentioned, see the "Manufacturers'/Distributors' Addresses" list on p. 90.

PERFECT SOLUTIONS



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- OCR AlfaScan Plus 400 DPI
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- Supports SCSI/2 Commands
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Features a 25MHz SCSI I/O processor with DMA Handshake. Take advantage of speed and compatibility with our low cost, high performance storage solution.

bsc



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The MultiFace III expands your Amiga by adding two (2) serial ports and one (1) parallel port. Included software supports multiple MFC's in one Amiga.

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The most cost efficient, high speed IDE Hard Drive and Ram expansion available in the Amiga market. A4000/3000/2000 compatible.

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Circle 153 on Reader Service card.

ers. The center of attention was the new **Scala Multimedia 300**, exhibited for the first time in Canada. Professional multimedia producer Martin Ricketts orchestrated a seemingly endless string of impressive multimedia presentations—showing off the many new features of the Scala upgrade and combining graphics, animation, and text, with music and sound effects. (RS# 121.)

Nearby, Scott Thedes, president of ***Axiom Software***, presented his impressive lineup of animation software, including **Wavelink**, which cuts rendering time in half by letting you hook up two Video Toaster systems (see p. 65 for a full-scale review). The new **WaveMaker** promises to create flying logos in a breeze. According to Thedes, it is used on the *SeaQuest* TV show to build storyboards. Also on display were revamped versions of **Anim Workshop** and **Pixel 3-D Professional,** both with PostScript and AGA support. (RS# 122.)

At the ***INOVAtronics*** booth. You could get a first-hand look at the new ASCII text editor, **Edge** (see "Reviews," p. 13), which promises to be a programmer's dream. You could also fiddle with the latest version (4.11) of the widely popular **Directory Opus**, and squeeze in a hands-on demo of **CanDo 2.51** (see "Reviews," Feb. '94, p. 12). According to president Tim Martin, the Dallas-based company will branch out into the exciting new area of customized multimedia applications with the formation of the INOVAtronics Interactive Media Group (IMG). (RS# 123.)

At a nearby booth, ***Migraph***, manufacturers of the Colorburst hand scanner, unveiled plans for two new professional flatbed scanners. These easy-to-use, high-quality, 24-bit scanners, the **MS1200** and **MS2400**, promise 1200 and 2400 dots per inch (dpi) scanning resolutions. Migraph plans to bundle ColorKit Pro and OCR (Optical Character Recognition) software with each scanner. (RS# 124.)

Toronto local, ***Legendary Design Technologies***, demonstrated its lineup of business/productivity software, including **Link-It!**, a file conversion kit, which lets you transmit data between your PC and Amiga via a high-speed parallel cable. Also on display were the familiar **dataTAX**, to help you prepare Canadian tax return forms, **Invoice-It!** invoicing software, and **Address-It!**, a database that generates mailing labels. (RS# 125.)

Heifner Communications was on hand running a demo of its new automatic JPEG conversion utility, **Pegger** (see "Reviews," Feb. '94, p. 15), and showing the **Toaster Cozzy 4000**, which lets you conveniently expand the A4000 and Video Toaster 4000. (RS# 126.)

At the neighboring ***Electronic Arts*** booth onlookers got creative with the popular **DeluxeMusic 2.0** and **Deluxe-**



ON-LINE SCAN

By Tim Walsh

With some oddball utilities it's difficult to put into words exactly what it is they do—you never would've missed it, but now that you have it you just can't live without it. Some are multifunctional—"it's a floor cleaner and a dessert topping"—and additionally offer support for Sun Mouse functions (automatic activation of the window under the pointer), mouse acceleration, and screen blanking. (All of these options are available within AmigaDOS 2.0 and later, but the PD stuff is a few notches higher in sophistication.)

Each of the programs included here is small (less than 50K) and new (from the last year) or a significant and recent upgrade.

A word of caution: Like oil and water, some of these little gems don't mix well. (For instance, don't try to run two screen blankers simultaneously.)

Menufy 1.0

Menufy by Ewout Walraven clearly qualifies as a really cool utility for AmigaDOS 2.0 and later. To use it, decompress the archive, set the Tooltypes for a particular hot-key combo, and drop it in your WBStartup. When you hit the hot-key(s), the active window will be instantly reduced to a selection under the Tools menu on the Workbench. To reactivate the window, you simply select from the menu.

Despite the author's modest claims, Menufy seems to be 100% compatible with everything from an A2000 to an A4000 with '040 acceleration.

NewPop 4.0 AGA

There's no mystery about Loren J. Rittle's NewPop—its name says it all. It lets you call up a new Shell with a hot-key combination. The program also blanks the screen after a period of inactivity. New configuration options and a repaired SCSI-port bug promise to make this version more bulletproof than previous ones.

ParM 4.4

Short for Parametrable Menu, Sylvain Rougier's $10 shareware ($25 will yield you an accompanying utility called BrowserII) lets you build your own menus for all of your disk-based executables. As impressive as that sounds, there are even more capabilities, including SunMouse support.

PickStartup

Bill Pierpoint's program lets you select any startup-sequence when rebooting. It is compatible with AmigaDOS 2.0 and 3.0. The author requests an exorbitant shareware fee ($1 million), but makes allowances for folks who choose not to pay.

QMouse

There are several versions of QMouse available, so be sure to get the latest (version 2.70). Dan Babcock's program gives you snazzy SunKey and SunMouse screen-activation capabilities, mouse blanking, auto-window activation, pop-CLI capabilities, drive "click" silencing, and mouse acceleration. It is compatible with DOS 2.0 and later.

Star Blanker 3.1

Some of the best PD screen blankers for the Amiga are found in the public domain, but most are large (250K+) files that are brimming with options few users have the time to explore. Brian Neal's Star Blanker 3.1 is a small (13K) "star field" blanker that is perfect for those 2.0/3.0 users who don't have the time, money, or desire to download the big guns.

Switcher

Khalid Aldoseri's Switcher lists all the current screens that are active on your Amiga and lets you select which ones to use. It doesn't stop there, though; it also offers launching capabilities, hot-keys, and provisions for grabbing screens. There is even optional three-button mouse support.

Last But Not Least

In February's column, I neglected to include Jim Meyer's Viewport in the roundup of online magazines. It is a popular bi-monthly available in several formats (including AmigaGuide), and it can be found on GEnie. Give it a try if you haven't already.

BIX
800/695-4882
617/354-4137

CompuServe
614/457-0802
800/848-8199

Delphi
800/695-4005

GEnie
800/638-9636

Portal
408/973-9111 □

Paint AGA programs. (RS# 127.)

Warm and Fuzzy Logic's **LightRave** drew much attention. With the module and the LightWave 3.0 software, you can run NewTek's program without the Video Toaster board. (RS# 144.)

Hey! What's That Sound?

At the ***SunRize Industries*** booth you could enter a drawing to win a music CD and preview an interesting demo of the new version of the **Studio 16** 16-bit, 8-track stereo audio card. It includes the software you need for digital nonlinear audio editing. Using a full-length action adventure entitled *Expert Weapon* (the third full-length movie Cine Excel has produced using Studio 16), SunRize demonstrated how easily this point-and-click-based digital audio editor can edit a movie featuring CD-quality sound. (RS# 128.)

Soft-Logik (RS# 129) teased the masses with previews of **PageStream 3.0** (watch for an upcoming release), and **TypeSmith 2.0**, a professional font-editing system (an update disk with minor bug fixes will soon be available).

At the Commodore booth, several companies shared floorspace, including Europe's ***Activa International*** (RS# 130), manufacturer of **MediaPoint**, a multimedia program. MediaPoint is an interactive graphics-editing package that supports a multitude of both native Amiga modes and third-party hardware. A remote-access module promises transfer support via modems, networks, and even satellites. (Watch for a review in an upcoming issue.)

What better way to show off the power of your networking software than to hook up several exhibitors' booths? ***Interworks*** rendered LightRave animations in a networked environment using the **ENLAN DFS** peer-to-peer networking and **Toaster-Net** software, and ASDG's Lan ROVER on CSA-accelerated A1200s. (RS# 131.)

Asimware unveiled its latest wares, including **AsimCDFS 2.0**—a CD-ROM driver (see "Reviews," p. 64) and its latest service—conversion of any data format (hard drives, floppies, spools of tape, and even videotape) to CD-ROM. (RS# 132.)

One of the busiest companies at the show was ***DKB***, which recently picked up support of Commodore's 4091 SCSI-2 controller. DKB also introduced the **DKB 1240** accelerator, a low-cost board for the A1200 that features a SCSI interface. In the works is an MPEG player for the Amiga. In addition, the Piccolo 24-bit graphics display card drew plenty of attentive onlookers. (RS# 133.)

Expert Services debuted its Picasso II screen blanker, **Canvas**, which includes fountains, fireworks, stars, and an assortment of other graphic effects. Its new **DisplayMaker** promises to be the definitive "application builder," with a WYSIWYG user interface. The centerpiece of the booth, the **Picasso II** 24-bit display card (see "Reviews," Jan. '94, p. 16), features powerful retargettable graphics. (RS# 134.)



MediaPoint offers a new look for multimedia presentations.

Stunning color printouts from ***Fargo Electronics'*** **Primera** color printer captivated the crowds. The thermal-transfer printer features a Photo Realistic dye sublimation option. It offers an affordable option for high-quality color output. (RS# 135.)

Lots to See, Hear

Great Valley Products' booth was abuzz with activity. Dazzling graphics on the new **EGS 28/24 Spectrum** video board prompted chuckles from the crowds. There's nothing terribly funny in seeing a swimsuit-clad couple stroll hand-in-hand towards the shore—unless, of course, they're swapping bathing suits along the way, courtesy of EGS-SpectraPaint.

Two new products for the A1200 were displayed: the **A1230 Turbo+ Performance Series II** (an upgrade to their earlier 1230 Turbo) and the **A1291 SCSI Kit**. (See p. 12 for a review of these products.)

GVP also gave demos of its new **TBC Plus**—a slick new infinite-window timebase corrector. For a market that can never get enough corrections, TBC Plus offers a real-time framegrabber, 16.8-million color framebuffer, and transcoder. ImageFX co-creator, Kermit Woodall, also showed the new features of the latest rendition of GVP's popular image-processing program. (RS# 136.)

Nearby, ***Utilities Unlimited's*** president, Jim Drew, was showing the latest Emplant invention—an Apple II emulator. Spectators could also witness impressive Macintosh graphics and QuickTime movies on an Amiga equipped with a Mac emulation board. (RS# 137.)

Moonlighter Software offered mass-storage options with **Ami-Back** and **Ami-Back Tools** data-backup and hard-disk maintenance programs. Another product, **TapeWorm FS**, lets you use your tape drive like a removable hard disk. (RS# 138.)

At the ***Digital Creations*** booth, renowned artist Jim Sachs demonstrated **Brilliance 2.0**, the versatile paint and animation program that supports all graphics modes on the Amiga. (RS# 139.)

Rombo, a Scottish company that specializes in video products, showcased its low-cost **Vidi Amiga 12** digitizer and 24-bit **Vidi Amiga 24 RT** packages. (RS# 140.)

At the ***Ixion*** booth, show attendees donned headgear for a flight through virtual reality courtesy of the **VR-Slingshot** 3-D flight simulator game. (RS# 141.)

Authors, Books, and More

For anyone looking for an easy way to learn ARexx, noted expert and author Merrill Callaway (***Whitestone***) was available with his *The ARexx Reference Disk*. (RS# 142.)

Bruce Smith was on hand to display his extensive collection of programming reference books and user guides for all levels of Amiga users. (RS# 145.)

The *Amiga Online Reference Manual* from ***Area 52*** claims to be the source for everything you need to know about the Amiga. The reference disk provides hardware specs and helpful charts, tables, lists, and so forth. (RS# 143.)

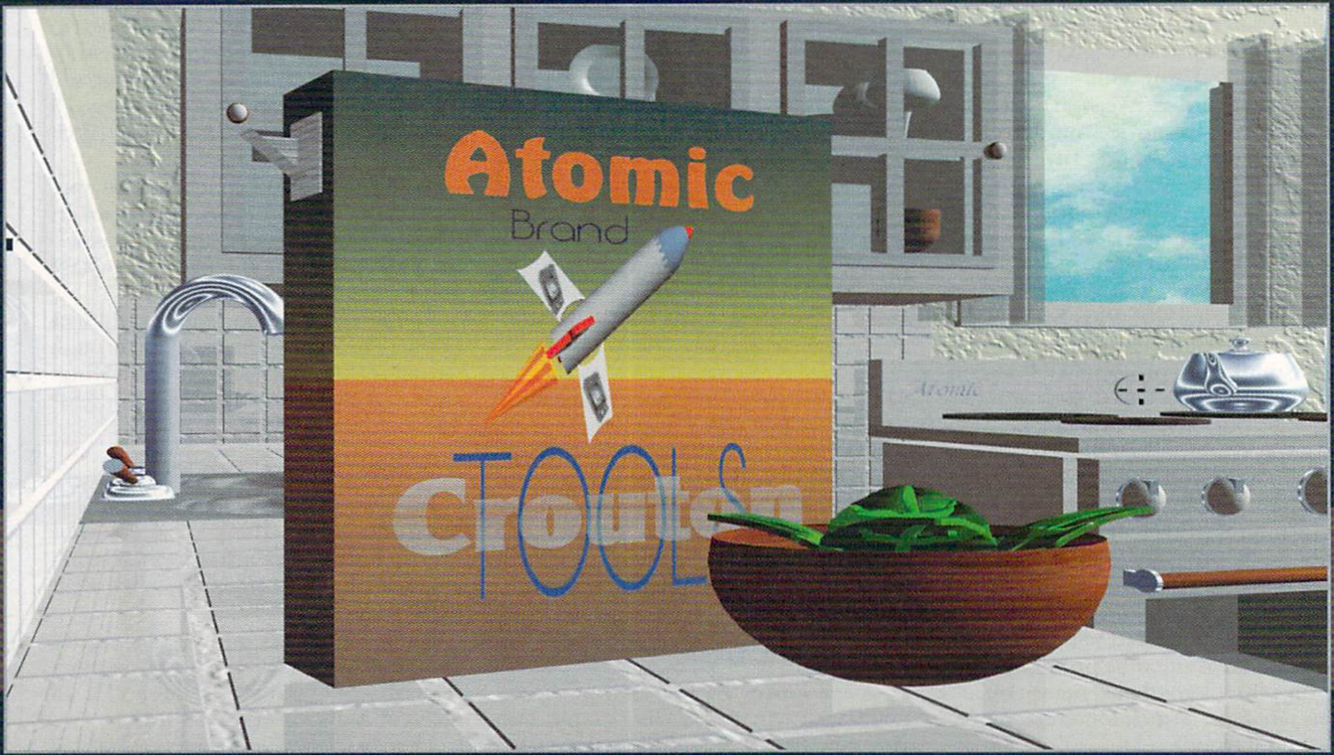
Clear Skies Ahead

In praise of the show, a tip of the hat must go to the many users groups from the Toronto area that actively participated in it, including the Hamilton Amiga Users' Group, Toronto PET Users' Group, and the Amiga Based Users' Group (ABUG), and to all groups worldwide whose loyalty and dedication to the Amiga market is unmatched. This 11th annual show seemed to be a sorely needed booster shot for the Amiga industry after recent announcements of Commodore's sickly quarterly earnings. And judging from the enthusiasm of developers and show attendees alike, the forecast for the next quarter looks very bright, indeed. ■

—DB and TW

Free kitchen sink included on every box!

Crouton Tools 4000



Okay, so no kitchen sink, but it ***is*** the most comprehensive video toaster workstation integrator available.

It's impossible to describe the incredible power of Crouton Tools 4000 within the limits of this ad. There isn't enough room.

Simply put, Crouton Tools 4000 is slick . . . control all of your major video applications directly from within your Video Toaster environment. With its 450 pre-defined video tools and 150 *NEW* synergistic functions at your fingertips, Crouton Tools 4000 greatly accelerates your pre- and post- production video.

Give yourself a break — Crouton Tools 4000 seamlessly handles data transfer between your favorite applications software packages. Our complete logging system allows you to grab frames directly from videotape and use them in the most comprehensive visual logging system of its kind.

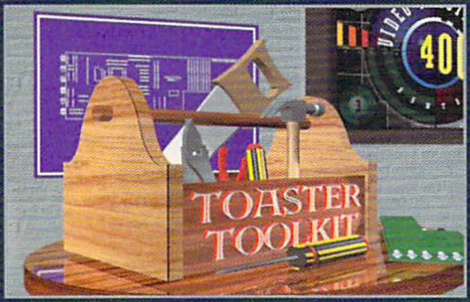
Oh yeah, it also logs audio, MIDI, CG elements, toaster projects, animation, frame store . . .

We didn't ask a programmer to create Crouton Tools 4000 — and it shows. Crouton Tools 4000 was created by Harold Russell, an award-winning working professional with over 20 years of video production experience.

Darn, we ran out of space! Order Crouton Tools 4000 today.

1-800-870-0759

Crouton Tools fully integrates and supports ADPro, Video Toaster, ImageFX, ImageMaster R/t, TV Paint, SFC, Studio 16, Pixel 3D, Bars & Pipes Pro, AmiLink, Personal Anim Rec., plus many others.



Toaster ToolKit 4000

An indispensible collection of utilities for Video Toaster 2.0, 3.0 and 4000 users. • AnimToFX • • Toaster Sequence Editor • FXToAnim • • Color Font Converter • Toaster Project Editor • • FrameStore Compressor •

MSRP $179.95



Cocoon Morph

The fastest and easiest-to-use morphing program you will find. Includes high end features found in expensive systems — without the Rolls Royce price! Cocoon is full-featured. Morphs are easy to set up with fast, accurate rendering.

MSRP $99.95

Video Solutions.

UTG?

We haven't decided what to call it quite yet. Maybe we'll call it *"The Ultimate Video Toaster Reference Guide,"* or maybe *"The Atomic Toaster Catalog: Version 3."* In any case, it is the most comprehensive reference manual of its kind for the NewTek Video Toaster and related digital video software and hardware systems.

On Sale March 15
MSRP $49.95

Video Toaster System Design contact Harold Russell:
(801) 466-7330
Video Software Sales contact DevWare Video:
(800) 879-0759

DevWare Video

Toaster Toolkit 4000 was developed by The Byte Factory. Crouton Tools was developed by Atomic Toaster Catalog. Cocoon was developed by Ironworker Studios. Video Toaster is a trademark of NewTek, Inc.

Circle 42 on Reader Service card.

R E V I E

A1200 68030 accelerator with RAM, clock, and optional FPU.

A1230 Turbo+ Performance Series II

Great Valley Products
40MHz $599 with 4MB, matching FPU $199; 50MHz $749 with 4MB, matching FPU $249
A1200.
Internal slot connection.
3.0 compatible.
Installation: Easy.

SCSI-1 controller for A1230 Turbo+ accelerator.

A1291 SCSI Kit Performance Series II

Great Valley Products, $149
A1200 with A1230 Turbo+ Performance Series II.
3.0 compatible.
Installation: Easy.

Are you seeking to speed up your Amiga 1200? Adding GVP's A1230 Turbo+ Performance Series II (PS II) accelerator and optional A1291 SCSI Kit to your system is like taking a Piper Cub and bolting on an afterburner-equipped jet engine. That's the level of a performance increase you'll get, except there's no danger of your A1200 falling apart in flight.

Hot-rod enhancements of the computer kind are possible with the A1230 Turbo+ PS II, a multi-function accelerator board that plugs into the Amiga 1200's expansion slot. It's available in two models—one sporting a 40MHz 68EC030 (a 68030 *sans* MMU) and another equipped with a faster, MMU-equipped 50MHz 68030. Also on the board are two SIMM sockets that allow the addition of up to 32MB of fast 32-bit RAM, a socket for a 50MHz 68882 math coprocessor, and a battery-backed real-time clock. Tucked away in the top corner of the board is something that makes it particularly interesting: a small expansion connector that can accept A1200 add-on boards, such as the A1291 SCSI Kit. More on that a little later.

Faaast RAM!

The two SIMM sockets on the board accept any combination of 1MB, 4MB, or 16MB GVP SIMM32 modules. The board won't accept industry-standard 72-pin 32-bit RAMs; GVP says it chose to stick with its proprietary RAM design so that owners of earlier GVP accelerators can move their SIMMs to this board. Although the custom GVP memory is a bit pricey, it compensates in the speed department. Using the 68030's burst mode, AIBB 6.5 tests show the A1230 Turbo+ PS II is a staggering 3.35 times as fast as an Amiga 4000 at memory accesses.

Overall CPU performance is excellent, with other AIBB tests showing integer performance 4.66 times faster than a standard A1200, 1.85 times faster than an A3000/25, and even 1.21 times faster than an A4000/040. The review unit I tested didn't come equipped with a 68882 FPU, so although floating-point operations were 4.47 times faster than a stock A1200, they were much slower than those of an A3000 or A4000 with an FPU. If you do any 3-D rendering, you'll want to spring for the FPU chip, as it can give you a ten-fold increase in floating-point math speed.

You can get an additional performance boost by copying your Kickstart ROM to fast memory. Normally this requires that you have an MMU-equipped processor, but GVP includes a special utility that remaps Kickstart to RAM even on the EC030 version.

The board is no more difficult to install than any other trapdoor board for the A1200. You just have to exercise a little patience, for it's a tight fit. All the chips and sockets are on the side of the board that faces the inside of your A1200, so you have to remove the board if you want to add RAM or an FPU.

Real SCSI

The A1230 Turbo+ PS II is a top-notch performer, but its edge stems from its expandability. A tiny expansion connector lets you attach a daughter-board for further expansion. The first card available for this slot is the A1291 SCSI Kit. This tiny DMA SCSI card slides into your A1200 through the small

To locate the vendors of the products reviewed, see the "Manufacturers'/Distributors' Addresses" list on p. 90.

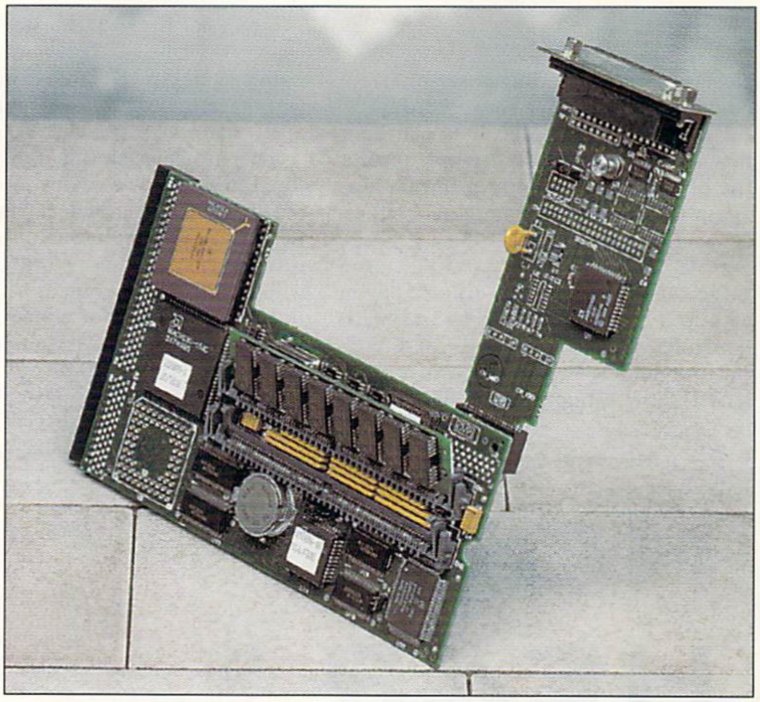
W S

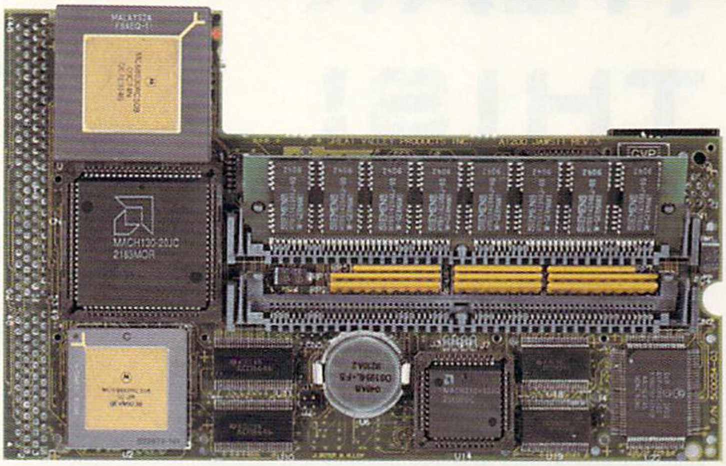
expansion door next to the joystick ports and connects to the PS II board already installed in your machine. The board looks simple—it's little more than an AMD SCSI chip, an edge connector, and a DB-25 SCSI connector for plugging in external SCSI devices. But basic design doesn't have to mean basic performance, as the interface provides superlative transfer speeds.

Setting up and partitioning your drives is easy with GVP's FastPrep software. The package includes both basic and advanced versions. The GVP-SCSI-Ctrl utility adds support for removable-media devices, SCSI tape-backup drives, and high-throughput SCSI devices. I tested the A1291 with an older Quantum external SCSI hard drive, a Bernoulli 150 removable-cartridge drive, and a NEC triple-speed CD-ROM drive (using the shareware AmiCDROM driver). Each type of device worked flawlessly. Thanks to GVP-SCSICtrl, the Bernoulli drive even recognized cartridge changes automatically.

The DiskSpeed benchmark program showed that even my relatively slow Quantum and Bernoulli drives transferred at over 1.2MB per second using the A1291—more than five times as fast as my A1200's built-in Seagate IDE drive. The A1291 supports autoboot, so you can use it to boot your system if you don't have an internal hard drive, or if you prefer to use your external hard drive.

Documentation for the A1230 Turbo+ PS II board is excellent, with the exception that it doesn't specify what speed of 68882 chip you need. The A1291 manual is fine as far as installation and using the GVP software goes, but I would like to see more discussion about actually using the profusion of SCSI devices you can attach to the board.





The A1230 Turbo+ Performance Series II can be combined with the A1291 for SCSI performance (top) or used as a stand-alone accelerator (bottom).

With crash-free operation, breakneck speed, great performance from the SCSI controller, and competent, easy-to-use software, the A1230 Turbo+ and A1291 Performance Series II constitute a highly recommendable package for turbo-charging your A1200.

— Denny Atkin

Highly customizable text editor.

EDGE

***INOVAtronics*, $99.95**
All Amigas.
2.x/3.0 compatible.
Hard-drive installable.
Not copy protected.
Accelerator compatible.
Minimum system: **1MB RAM, AmigaDOS 2.04 or later.**
Recommended system: **Hard drive.**

Text editors are like religions and political parties —most folks have a favorite and no amount of arm-twisting will get them to change. Well, INOVAtronics hopes to get Amiga users to switch to its new Edge text editor by offering what may be the best one on the market—and it just might succeed.

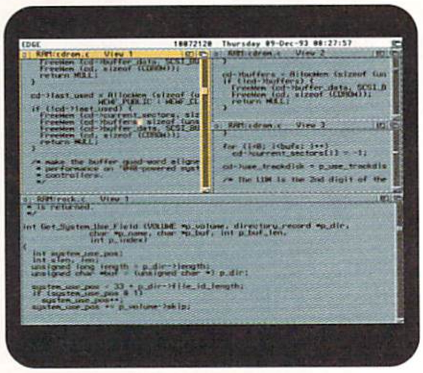
In a market as mature as the Amiga's, most programmers are set in their ways with a favorite text editor. ASDG's CygnusEd Pro, for example, while it has a non-standard user interface, offers incredible speed and solid operation. Oxxi's TurboText isn't as swift as CEDPro, but it conforms more ►

closely to standard Amiga user-interface conventions and is easy to configure. But now here comes Edge, INOVAtronics' new text editor, in an attempt to offer the best features of both of those packages without the disadvantages of either.

A Slight Edge

Edge's spartan manual is only 22 pages, with four of those devoted to an ASCII-equivalents chart. The bulk of Edge's documentation is contained in a disk-based 330K AmigaGuide help file; the paper Quickstart Guide contains only installation instructions, usage basics, and a features list.

The AmigaGuide file should supplement, not replace, a conventional manual. It's just not practical, since on-line help makes it tough to explore new features, and you cannot study the manual while performing your morning constitutional. You can, of course, print out the entire help file with a word processor, but it won't be indexed and nicely organized like a conventional manual.



Multiple documents are easy with Edge.

That concludes my sole complaint about this otherwise excellent program. After installing Edge—a simple process—you're ready to edit. Edge opens a standard Intuition screen, complete with a resizable editing window. You can open as many documents as you can fit into memory, a feature unmatched by the competition (CEDPro has a fixed limit, and TurboText mysteriously runs out of memory while you still have plenty free).

Furthermore, you can also open multiple views on a document, which is great for comparing sections of code. Extensive window-management features allow you to tile windows and have them automatically resize. Edge's autoscrolling feature, which lets you create a large virtual screen under AmigaDOS 3.0, allows for the use of large fonts.

Edge the Chameleon

Edge doesn't have hard-coded functions; rather, every menu item calls either an ARexx command or script. This means that ARexx-savvy users can tailor virtually every function of the program to their liking. With an afternoon's work you could reconfigure Edge to be command-compatible with any other editor.

Edge provides not only all the standard items you'd expect in any good text editor—such as bracket matching, Auto-Indent, bookmarks, and case correction—but also many neat extras, such as Evaluate Block. This allows you to highlight a mathematical expression and have Edge replace it with the result. You can also easily search for large blocks of code by copying a highlighted block into the Find requester.

A number of handy ARexx macros are included, such as one that will automatically look up a highlighted C function in the Amiga AutoDocs. You can write your own macros from scratch, or record sequences and save them as editable ARexx scripts. Having a complete refer-

ence to Edge's ARexx commands available at a Help-key press is a real boon when creating scripts.

THE EDGE: DEVICE

Edge has the ability to operate as a virtual AmigaDOS device. This process creates an assignment called EDGE: that works just like a disk device, complete with a Workbench icon. Any file sent to the EDGE: device automatically opens on an EDGE screen for editing.

You can redirect a program's output to the EDGE: device for editing. If you have a directory filled with C source files and you want to edit five of them, simply select them in your directory utility and copy them to EDGE:. You can also load files by dragging them into an Edge window on the Workbench, or via an AppIcon.

Moving files around is a snap, either by using the keyboard or by dragging the mouse pointer on the screen; you also have the option of configuring the numeric keypad for cursor control. Edge supports bookmarks, as well, and has a Fold facility that can hide sections of your text on the screen. Folds are particularly useful when programming; once a routine is finished, just "fold" it so that instead of all the code, you see only the name of the routine.

Other options include both standard and columnar block selection; automatic case correction; short-cut dictionaries; user-definable fonts; and multilevel undo and redo (limited only by the amount of memory you choose to devote to the function). Also available are high-speed search-and-replace, with clipboard support for copying blocks of text to the search or replace buffers; automatic multiple backups with auto-numbering; word-wrap; and mouse-pointer blanking when you type. Edge supports both the system clipboard and a local clipboard.

While no ARexx macros are included to link Edge with popular compilers such as SAS/C 6.5, you can easily create your own. There's nothing missing here that you can't add yourself with a little ingenuity and patience. Programmers, writers, and anyone who frequently works with large amounts of plain text owe it to themselves to try Edge—it's a must-have for your text toolkit.

— Denny Atkin

TOASTER TOOLBOX 4000

***Desktop Video Systems*, $369.95**

A2000/A3000/A4000.

***Minimum system:* Toaster-equipped Amiga or Video Toaster 4000.**

***Recommended system:* Same as minimum.**

***Installation:* Easy.**

Power-supply-equipped expansion device for Video Toaster peripherals and accessories.

Since the introduction of NewTek's Video Toaster, Amiga users have enjoyed free-for-all shopping sprees for numerous internal video devices. The list includes low-cost internal time-base correctors, computer-based waveform monitors, vectorscopes, edit controllers, single-frame controllers and assorted devices and boards essential to the use of the Toaster.

However, with downsized Amigas, such as the 3000 and 4000, it's easy to fill all the available expansion slots before ►

you've even installed a Toaster. Mandatory devices such as additional hard drives, RAM cards, and internal modems quickly clog the system and often overlap adjoining expansion slots. Toaster Toolbox 4000, a new Toaster expansion box, makes some valuable internal connections available.

EXPANSIVE ACCOMMODATIONS

At a glance, the Toaster Toolbox 4000 looks like a mini PC tower case. Opening the beige box reveals eight PC expansion slots. No bus link exists between your Amiga and the Toolbox, but any of the aforementioned cards that use an Amiga PC slot will work in the Toolbox. You'll also find that card-based peripherals like video delays, sync generators, and the Toaster Timer (PreVue Technologies) work well, too.

Connections to your computer are made via video cables, serial cables, coaxial cables, and so on. Freeing up the Amiga slots carries some side benefits, as well. For example, installing Prime Image's TBC/PCB in the Toolbox lets you use your Video Toaster to convert between PAL and NTSC signals. Personal Animation Recorder (Digital Processing Systems) owners will find that the Toolbox houses their TBC-IVs and also provides an additional serial link in the process.

Furthermore, it is possible to use the Toolbox to mount a variety of hard drives that you can then connect via a SCSI cable to your Amiga's SCSI controller, or directly to the A3000's SCSI port. The drives could be mounted on a card bracket, or placed in the 3.5-inch drive bay. There is also a 5.25-inch drive bay that could hold a removable-media drive—such as a SyQuest—in a pinch.

If you can turn a screwdriver, you have all the qualifications needed to install expansion cards in the Toolbox. Remove the cover by loosening a few screws and slip any desired cards into any available slots. After securing the cards in the Toolbox, reattach the case cover, make any necessary connections, and then plug the Toolbox into an outlet.

Because most expansion devices you can install in the Toolbox do not require much, if any, physical adjustment once they're in, you can place the Toolbox away out of sight. The Toolbox's built-in, 200-watt power supply energizes all the cards inside. The separate power supply simply helps your Amiga run a little cooler and last longer by lessening the strain on the computer's often overtaxed supply.

PAPERWORK

The documentation for the Toolbox consists of a warranty and FCC Statement, a registration form, and a single page that describes how to remove the



Toaster Toolbox hard at work.

case cover and install expansion cards. Sparse documentation, to be sure, but adequate, as the Toolbox's job is merely to house expansion cards and drives.

In the end, the Toolbox serves an unexciting, albeit useful, function. Install the cards, make the connections, and move on to more important matters, like making

money with your Toaster. Nothing could be simpler. I recommend the Toaster Toolbox 4000 for those who need more internal expansion room than their current Amiga provides. That list probably includes everyone who uses a Video Toaster.

—Dave Thomas

Final Writer

SoftWood, $199.95

All Amigas.
2.0/3.0 compatible.
Hard-drive installable.
Not copy protected.
Accelerator compatible.
Minimum system: **AmigaDOS 2.0 or later, 1.5MB RAM, hard drive.**
Recommended system: **Accelerator, 2+MB RAM.**

Full-scale word processing or small-scale desktop publishing.

Amiga owners who use advanced, high-end word processors on Macs and PCs know similar pickings are substantially slimmer on the Amiga side of the fence. To fill the vacuum a bit, SoftWood, developer of Final Copy, has introduced its all-new Final Writer package.

Form Follows Function

Final Writer works like those upscale word processors, and you need to devote a big chunk (10MB) of your hard drive to house it. With a 68030 or 68040 accelerator in place, it's a very swift performer whose performance defies its bulk. An attractive point-and-click interface relies heavily upon the use of the mouse and icon-laden tool bars for menu selections.

The Final Writer tool-bar concept is augmented by the addition of a user-configurable "button strip" located at the top of the screen. Instead of restricting you to one fixed set of button-strip icons, Final Writer allows you to pick and choose icons by simply dragging and dropping them on a Preferences screen.

If an icon doesn't exist for a certain function, users can harness Final Writer's ARexx port—which includes roughly 200 ARexx commands—to create the function manually. If you can't get an icon to do what you want, the program thoughtfully provides a definable user menu for ARexx macros, menu commands, and other options.

Final Writer fully supports the inclusion of graphics in documents. After loading an image, you can resize and reposition it, using several available text-flow options to pour text smoothly around oddly shaped graphics. IFF, HAM (4096-color), and HAM8 (256,000-color) graphics formats are all supported. You can also import EPS (Encapsulated PostScript) format images for display. (If you're looking for ready-made images, the program even includes 100 EPS images.) There are also provisions for importing Amiga ASCII, ProWrite, WordPerfect, and Pen Pal format text files.

Creating lines, boxes, and ovals—filled or unfilled—is a snap with Final Writer's limited, but useful, collection of structured drawing tools. The program also allows you to rotate text and graphics objects.

Final Writer offers a number of management tools to facilitate the manipulation of large documents. It can also generate tables of contents, indexes, endnotes, and headers and footers. In ►

addition, you'll find three powerful, less run-of-the-mill document-management features: sections, master pages, and paragraph styles. Using the sections feature you can segment a document into separate portions, each with its own page-layout settings—perfect for creating title pages, indexes, and tables of contents.

Final Writer's master-pages option should be familiar to veteran desktop publishers. With this feature, you can create a set of guidelines—like a template—to which all the pages in your document will conform. Master pages are ideal for books and other projects where stylistic cues such as page accents (lines and shaded areas) are repeated on each page. Finally, the paragraph-styles feature allows you to define, name, and save formatting information for individual paragraphs.

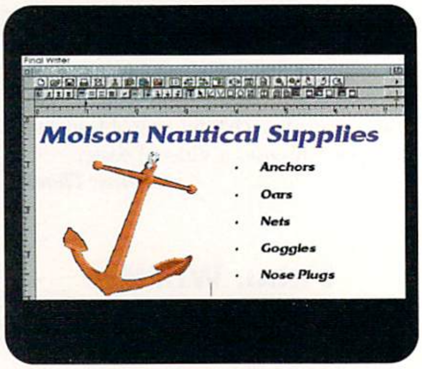
EXTRA! EXTRA!

If you're planning to create a multicolumn newsletter, Final Writer supports up to six columns (although not those of the "non-snaking" variety). It also supports mail merge, letting you create large numbers of individualized form letters quickly. Surprisingly, screen text appears rather coarse; serif fonts less than eight-point are hard to distinguish. Using a screen resolution of 800x600 mitigates this somewhat, and Final Writer offers a screen DPI setting that produces a more readable display without affecting final output.

On the plus side of fonts, however, Final Writer supplies users with enough typefaces and type styles to make even fussy typesetters content. Support for the Agfa Compugraphic outline-font format is standard fare, as is that for Adobe Type 1 fonts and SoftWood's variation on the NimbusQ outline-font format (more than 100 NimbusQ-style fonts are available). I found output for all outline fonts to be uniformly clear and sharp, even on a nine-pin dot-matrix printer.

In addition to the normal variety of text styles (bold, italics, underlining, and so forth), Final Writer offers an "oblique percentage" feature that slants text to the left or right—ideal for special text effects.

To polish your prose before printing, Final Writer provides a complete 144,000-word spelling dictionary and a hefty 1.4 million-word thesaurus. Also included is a simple, but useful, document-statistics option that reports on the number of words, sentences, and other information in a document. The program also incorporates a limited page-preview option, allowing you to proof your document before output. Final Writer uses a desktop-publishing-like



You can import images in a variety of graphics formats into your Final Writer documents—or use the program's structured-drawing tools to create your own, as in the example above.

system of different views (25%, 50%, 100%, and so on) for previewing.

When you're forced to dig out the documentation to find some information, you're not likely to be disappointed. Final Writer sports a well-written instruction manual packed to the margins with reference material, tips, and tutorials.

END OF FILE

Final Writer has few flaws, but it doesn't have everything, either. The program contains no undo feature, and it does not support directly the creation of footnotes in a document. Its minimal support for text from other word processors is a tad annoying, too. With these improvements and increased support for graphics formats—and perhaps AmigaGuide online help—Final Writer would come pretty close to perfection.

These few foibles aside, however, Final Writer does herald a new era in Amiga word processing. While it might not surpass the heavyweights in the Mac and MS-DOS domains, Final Writer is arguably the best word processor yet released for the Amiga.

—Jeff James

MATHVISION 2.4

Seven Seas Software, $223

(upgrade is $49 for current users; $79 for Doug's Math Aquarium owners; Video Gold version, $750)

All Amigas.
1.3/2.0/3.0 compatible.
Hard-drive installable.
Not copy protected.
Accelerator compatible (floating-point and IEEE versions included).
Minimum system: **1MB RAM.**
Recommended system: **AGA computer or 24-bit display board, accelerator, 4MB RAM, hard drive.**

Special-effects generator using mathematical equations.

Back in 1987, when I began using Doug's Math Aquarium (DMA) from Seven Seas Software, I enjoyed the program's intriguing, sometimes mystifying, visual displays. That program has evolved into MathVISION (MV), version 2.4. New features of this graphics-plotting program include AGA and 24-bit support. Serious users haven't been left out, either, as there's also a "Video Gold" MathVISION, which is the 2.4 program with one-and-a-half hours of training, an 800 phone number, e-mail support, electronic newsletters, and free upgrades for a full year.

FULL VIEW

MathVISION creates dazzling, precise Amiga graphics using formulas plotted by the computer. A background in math (we're talking sine, cosine, tangent, and cotangent functions here) is helpful, but whether you know exactly what you are doing or just use a trial-and-error approach, the results are impressive.

ARexx support within MathVISION is exemplary, which raises its potential as a multimedia tool. While MathVISION 2.4 does not come packaged with ARexx scripts, the Video Gold version does.

While the thrust of this upgrade targets owners of AGA machines and 24-bit display boards, a unique feature that you can experience on lesser Amigas is its color-cycling mode, which is capable of

Continued on p. 60.

TWO for the price of ONE*

Buy one Timebase Corrector... ...and get a second one FREE!*

The Kitchen Sync is TWO complete S-Video compatible infinite window time base correctors on one IBM AT/Amiga compatible card. And at a price that you would normally pay for a single TBC.

Completely synchronize not one, but two independent video sources for use with virtually any switcher or digital video effects system requiring synchronous video inputs.

Two complete time base correctors on one card that can plug into any IBM AT compatible slot.

Check out these great features:

♦ Plugs into any IBM AT compatible or any Amiga A2000, A3000, or A4000 PC slot ♦ Plugs into Digital Creations new Video Slot Box ♦ Works with any video source, even consumer VCRs and camcorders ♦ Use multiple Kitchen Syncs, together for more channels ♦ Completely accurate sync generator built in: totally regenerates all sync and blanking signals; guaranteed accurate S/CH phase relationships ♦ Built-in proc amp ♦ Broadcast quality output ♦ Completely digital design ♦ Microprocessor controlled ♦ Easy to adjust external LCD control panel ♦ Advanced sync output ♦ Inputs are S-VHS and Hi-8 compatible. Use either composite or S-Video into either channel ♦ Great for use with the Video Toaster ♦ S-Video output option for full S-Video operation ♦ Control operation independent of Amiga, PC, or Toaster operation ♦ Easy installation ♦ No timing adjustments necessary for small stand-alone applications ♦ Genlock option available for house system integration ♦ Jitter-free freeze frame, field1 or field2 (channel independently selectable) ♦ Variable rate strobe ♦ External contact-closure interface for freeze ♦ Three user presets and one factory setting stored internally

The Kitchen Sync makes it easy to complete your desktop video installation. Everything you need is here.

♦ All on one card ♦ All at one great price



The Kitchen Sync

$1295.00

* At this price its like buying one TBC and getting the second one free.

- ♦ S-Video option $99.00
- ♦ Genlock Option $150.00

NEW!

Both composite and S-video in an external genlock

The SuperGen SX is our newest genlock and overlay system for Amiga computers. The "S" in "SX" stands for S-Video. The new SuperGen SX is a full featured S-Video genlock. The "X" stands for eXternal. The SX is an external device that attaches to any Amiga computer through the RGB port.

We have taken the best features of both the SuperGen and the SuperGen 2000s and combined them along with some great new features to make the ultimate new genlock for the new Amiga computers.

True broadcast quality video output ♦ True Y/C genlock and overlay ♦ Two independent dissolve controls ♦ Software controllable ♦ S-Video to composite or composite to S-video transcoding built in ♦ Interpretive dissolve mode ♦ Switchable 3.58MHz notch filter ♦ Switchable video input selection ♦ Switchable Genlock Disable for productivity mode uses ♦ One S-Video Input ♦ One S-Video Output ♦ One Composite Video Input



SuperGen SX

♦ One Composite Video Output ♦ Professional Key Out for use with switchers ♦ Switchable Chroma Notch filter ♦ Selectable blanking ♦ BNC and S-Video connectors ♦ Fast Sync Tip Clamp ♦ Key Output ♦ Internal RS-170A Blanking Generator ♦ Switchable Setup Adder ♦ Compatible with all Amiga models.

The new SuperGen SX external S-Video compatible genlock for the new series of Amigas has everything you want in a genlock and overlay system for your Amiga.

$749.00

NEW!

Break the single video slot barrier!

♦ Four Video Slots! ♦ Three PC/AT bus slots (power & ground only) ♦ 230W switching power supply ♦ Two 5.25" and two 3.5" drive bays

The Video Slot Box is a revolutionary new mini-tower that expands any Amiga A2000, A3000, or A4000 to have four complete video slots, three additional PC AT bus slots (Power and Ground only) for compatible cards such as our Kitchen Sync TBC, room for two 5.25 inch half height devices and two 3.5 inch devices (You can use this room for SCSI hard drives, optical drives, flopticals, tape drives, or anything else that fits.), and a beefy 230 watt switching power supply.

The Video Slot Box provides these solutions:
Use the Video Toaster with an Amiga A3000. Use more than one video slot product in your Amiga. Easily move your desktop video environment between Amigas.



Video Slot Box

The slots in the Video Slot Box are complete video slots with all the capabilities of the video slot within the Amiga. You can place up to four video slot products into the Video Slot Box. A front panel selector lets you choose which product is actually in control of the video slot within the Amiga.

With products that are "video slot masters" such as the Video Toaster or a genlock, only one of them can be active at a time. The video slot box allows you to easily switch instantly between several such products within one machine without having to ever swap boards.

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VIDEO TOASTER 3.0

Rx *for* FX



22 March 1994

...Very Special

BY DAVE THOMAS

With a host of hot new features, the Toaster's 3.0 software opens up a dazzling new array of special effects. Here's an equally special selection of tips and techniques designed to help you take advantage of some of the more impressive ones.

WHILE EACH NEW version of the Video Toaster's software has brought enhancements, none can match the new features and improved performance you'll find in version 3.0. The latest release offers more options, operates more smoothly and easily, and opens up possibilities for marvelous new special effects.

Perhaps no Toaster modules have undergone more significant revision than the 3.0 versions of the Character Generator (CG) and LightWave. The tips and techniques presented here will show you how to make the most out of some of the new features these two now offer.

A basic knowledge of the Toaster and its software will be helpful here. It would also be a good idea to familiarize yourself with the introductory tutorials in the Video Toaster manual before trying these techniques. Besides providing you with more information about new Toaster features, I hope these tips will lead you to some creative new ideas of your own to experiment with.►

Character Generator

NEW FEATURES OF the 3.0 CG expand the range of titling effects you can achieve. Besides offering mouse control for the first time (previous versions allowed only keyboard control), the CG now enables you to load Type 1 and Type 3 PostScript fonts, which provides for much greater flexibility in font choice and sizing. In addition, you can now incorporate other graphics elements, called brushes, into CG pages. We'll examine this latter feature in depth through a specific example.

Brushing Up on Titles

Brushes can consist of graphics images anywhere from 1x1 pixel to 752x400 pixels in size. You can use brushes from third-party suppliers, create them in paint programs such as ToasterPaint, or render them in LightWave. For our example, we'll demonstrate how to make a beveled box in LightWave and import it into the CG. Don't worry if you're not very familiar with LightWave, as this is a particularly easy operation to perform.

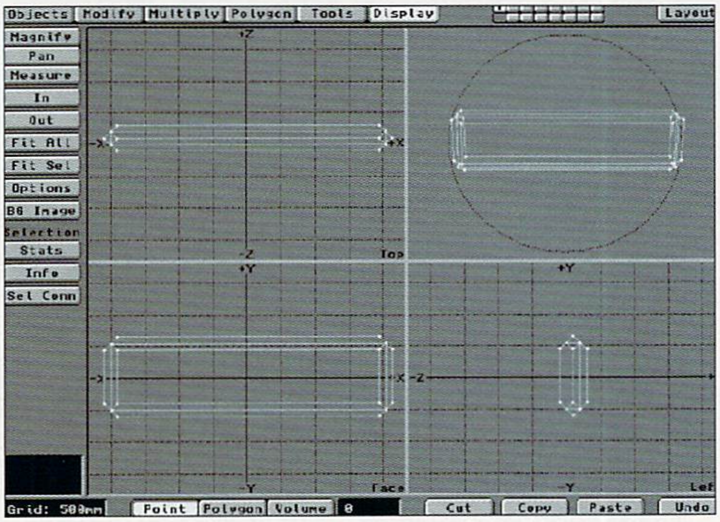


Figure 1. Version 3.0 of the Toaster's CG allows you to incorporate brushes into your titling. Here a beveled title box is being created in the Modeler module.

From LightWave, first enter the Modeler module. Create a box by clicking on Box under the Object menu and dragging it out in the Face window. Be sure to add some depth to the box by extending it in the left window. When the box appears to be the right size, click Make to create the box. Now go to the Multiply menu and click the Bevel button. Leave all the parameters set to their default values and click OK. After the operation is performed, the box will be redrawn on the display with a beveled edge around it (see Figure 1). Save the object (call it "Box") and return to Layout.

Under the Object menu in Layout, select Load Object to load the box and then move to the Surfaces menu. This is where the look of the box will be assigned. To keep things simple, click Load Surface and choose Marble, one of the preset surfaces contained in LightWave. After the surface loads, click Continue to return to Layout. Next click Camera View to see where the object is positioned. When an object is loaded into Layout, it will default to a center position in the layout screen. If this is not where you want the box, use the options under Edit to move and size it to your liking. (Be sure to make a keyframe for the object if you make any changes.)

Once the box is positioned correctly, go to Record and select Save RGB Images. Choose a place in the file requester to save the image, click OK, then click Continue to return to Layout. Now go to the bottom of the screen and click Render. Make sure that Frame and Last Frame are set to 1 (only one image will be rendered), then click OK. Depending on the speed of your machine, it should take about a minute to render the picture. If the image looks fine, click the Switcher to return to the main Toaster screen.

The rendered image will probably have a large amount of blank space around it, so it might be a good idea to use just the part where the box appears. To accomplish this, load the image into ToasterPaint. Click the Scissors icon and cut the box out of the picture. Under the Brush menu, save the brush (call it "Boxbrush") and click OK. Now return to the Switcher and enter the CG.

Click the Load Brushes button and select your new brush. Position the cursor where you want the brush placed, and then select BoxBrush from the menu to make the brush appear on screen. Once you have the brush on the display, you can move it around to a new position, or add an outline or shadows to it. Using the Alpha Channel, you can also adjust the transparency of the brush.

The CG can hold as many brushes as system memory will allow, so it is possible to put together complex pages. Remember that brushes don't have to be boxes—they can be any type of image, from logos to grabbed video frames. Also, don't forget to make use of the Shadow, Outline, and Transparency controls to add even more effects. For instance, you could make a logo transparent and place it in the lower-right corner to create one of those ever-present channel IDs that are popping up all over cable.

LightWave

THE 3.0 VERSION of LightWave is packed with new features, many of which were available previously only on very expensive, high-end animation workstations. In addition, the interface has been redesigned, making the program simpler to use. It would be easy to fill an entire magazine talking about the new LightWave, so we'll confine ourselves to three examples that demonstrate the more impressive of the new features in action.

Particle-Animation Tricks

We'll start by showing you how LightWave can create one high-end effect that technically is *not* available within the program: particle animation. You've probably seen examples of particle animation in numerous commercials: flying snow, realistic-looking rain, objects dissolving into tiny spheres that scatter in all

"Don't be afraid to try new effects with the 3.0 versions of the CG and LightWave."

directions, explosions, and more. Some high-end 3-D programs provide for the animation of groups of small objects (particles) in user-defined motions—placing them under control of such variables as wind, gravity, and so forth. While LightWave doesn't offer these yet, it's possible to simulate some simple particle animation with the use of one of the Modeler's new tools: ARexx Macros.

Simulating particle movement will require morphing, so you must create at least two objects: a beginning object and an ending object (which LightWave refers to as the target). First, create a target object. (Make it something simple, like a short word.) We'll call this object "Final." After creating the object, access the Stats command from the Options menu. Make a note of the number of points shown in the object. Now select a different layer in Modeler because you will be creating a new object. Return to the Object menu and access Macros. (You'll see quite a lengthy list of them.) Select the Point Distribution macro, and a dialog box will appear in the center of the screen (see Figure 2). Among the parameters for the point distribution are size (how big an area the points will cover), basic shape (circle or square), and method of distribution (including linear, exponential, and random). To use this macro, enter the number of points in your original object in the Points box, select any other options you want, and click OK. The program will now generate an object that looks like a cloud of points. Call this object "Points." Save both objects and then load them into Layout.

Once in Layout, select Points as the current object on the Object screen. The morphing options are located toward the bottom of this screen. First, select the Morph Target of the object. (Otherwise the program defaults to None.) Accessing the list will display the two objects, Points and Final. Select Final as your morph target. To create an animated morph, click on the E button next to the Metamorph Level. This displays the envelope controls for the morph (see Figure 3). For a simple morph, create one keyframe at frame 0 and another at frame 30. Make the Metamorph value 0% for frame 0 and 100% for frame 30. You should see a rising diagonal line on the envelope display. After setting these values, the Points object will morph smoothly between its original shape and that of the target over 30 frames. When finished, click on Use Envelope to return to the Object screen. Select Final as the current object, and then set the Object Dissolve amount to 100%. Since this is the target object, it should be made invisible to the camera in the Layout screen.

Return to Layout and render a test animation. You should see the Points object taking the form of the Final object. Depending on what the Final object is, the morph may not look right at first, as the Points object has no edges. To counteract this, set up an Object Dissolve envelope for the Final object with the amount at 100% for frames 1–29 and at 0% for frame 30. When the wireframe animation is rendered now, the Points object will take the

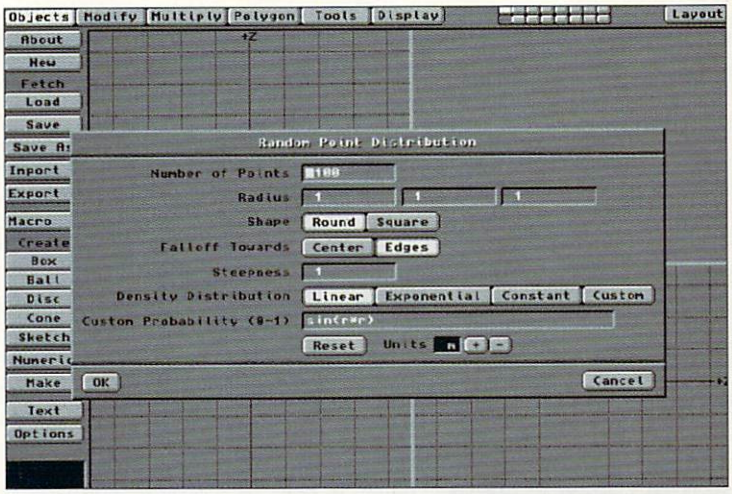


Figure 2. Using LightWave's new ARexx Macros tool, you can now simulate high-end particle-animation effects. Here parameters are being set for the Point Distribution macro that will create the objects to which the effect will be applied.

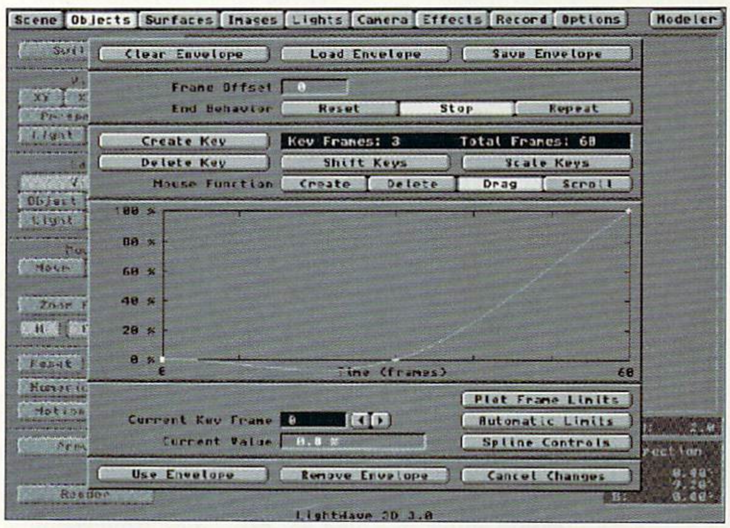


Figure 3. After creating your objects (Fig. 2), set up an animated morph via LightWave's envelope controls to complete the effect. Here, the sequence is set for 60 frames with three keyframes.

shape of the Final object, with the complete Final object appearing on the last frame. Sometimes this can look jarring, as if the Final object were suddenly "popping" into view. One way to work around this is to apply the Clone Object command to the Points object, making many copies. Then offset the clones slightly from the original object in the Layout ►

screen. This gives the particle cloud an appearance of greater mass.

LightWave ships with a variety of ARexx Macros that you access from the Object menu. These range from the useful (Curve Text) to the silly (the random Haiku generator), but if you do not find one that suits your needs, you can create your own by programming them in ARexx or purchasing them from a third-party developer.

Remember that while this is a simple example, you can use these techniques to create much more complex effects. Since objects in LightWave can have multiple morph targets, the particle cloud can change into many different shapes before assuming its final form.

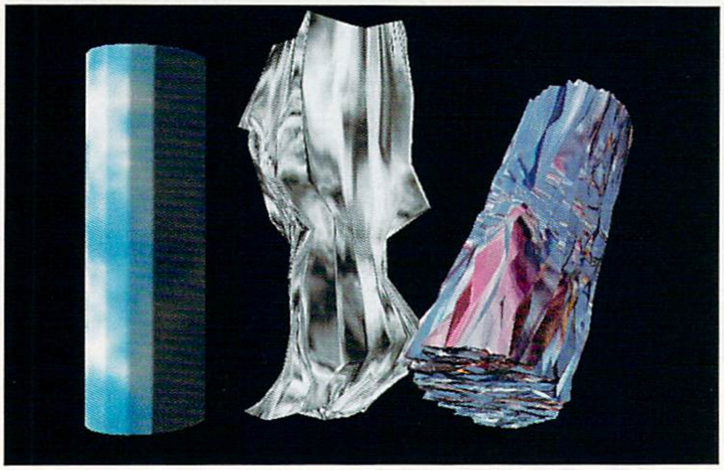


Figure 4. Examples of Displacement Mapping, a new feature of LightWave 3.0 that you can use to create objects with unusual shapes and textures that would be difficult to model from scratch.

While the Point Distribution macro can create many different shapes, you can manipulate them even further with any of the Modeler tools. Also, keep in mind that LightWave now supports surface morphing, so you can even do such things as having, say, a golden particle cloud form a glass object.

Mapping Out Some Neat Effects

And now for a previously high-end-only option that *is* now a part of the current LightWave: displacement mapping. Utilizing this feature involves a technique for deforming objects via texture maps. In doing so, the brightness value of the texture will cause a shift of the polygons on the object from their original positions. Displacement mapping has many uses, from creating objects with actual bumps (as opposed to bump mapping, which gives only the illusion of bumps), to making objects ripple, twist, or assume unique shapes that would be difficult to model.

For our example, enter the Modeler and use Create Box to make a flat plane. Moving to the Polygon menu, create more polygons in this object by using first the Triple and then the Subdivide commands. Since displacement mapping changes the object's shape, the object should have many polygons so that it will not become too distorted. Repeat the use of Triple and Subdivide several times until you have what looks like a fine mesh. Save and export this object into Layout.

Once in Layout, go to the Object menu. In the middle right of the Object screen is the Displacement Map button. Clicking this button brings up the Displacement Map control panel, which is very similar to the other Texture control panels in LightWave. First, select a Texture Type to be used on the object—for our example we'll choose Ripples. Change the Texture Amplitude to .1, the Wavelength to .05, and the Wave Speed to .001. Leave all the other parameters set to their defaults. Click Use Texture to accept these parameters and then return to the Layout window. Generate a wireframe preview, and you should see the mesh ripple as if it were made of water. You're also at a good starting point for more experiments with this particular texture. Changing the parameters gives you different looks, and using variables such as Texture Velocity can alter the motion over time.

For another type of displacement mapping, try the Fractal Bumps texture. Make a tube in the Modeler and apply the default bump map texture to create a twisted object that looks something like a bone. Reducing the Texture Amplitude will produce calmer patterns—more like rippled skin. The displacement mapping feature is what actually creates these "bumps" on the object, unlike in "bump mapping," where changes in the object's surface are merely simulated. (See Figure 4 for some of the examples cited above.)

You can also apply images as displacement maps. The brightness value in the image will determine the displacement of the object's polygons; the brighter the color, the greater the "height" of the displaced polygons. Height can be controlled further through the Texture Amplitude variable (with a default value of .5 being a pretty good starting point). Using texture maps, it's easy to create a variety of different effects, including embossed objects. Also, try using a topographical image to create a landscape object. (An image used for this purpose should either be 24-bit color or 256-level grayscale, so that the maximum amount of brightness variance is available.) In addition, series of images can be mapped onto the object. It's even possible to make a pattern move across an object.

Displacement mapping can also be used for object creation/alteration. Employing the Saved Transformed button on the Object menu, you can save the currently selected object in its altered state and then load it into Modeler for further manipulation. This can be useful for creating interesting targets for morphing or for creating objects that would be very time-consuming to model in a normal fashion (such as the landscape example mentioned above). As you can see, displacement mapping is an extremely powerful feature, and one you can use to create many, many more effects than the few we've outlined above. Taking full advantage of the wide array of controls and capabilities available (particularly the ability to animate textures and to map series of images) can result in some truly spectacular imagery.

Walk Dem Bones!

One of the more complex effects to achieve in any kind of 3-D program is realistic, natural-looking

movement—human or otherwise. Squashing, stretching, bending, and walking/moving-around motions are generally difficult, time-consuming sequences to create. LightWave's new Bones feature makes this process a lot easier. Bone-shaped objects are added to an object from the Object menu in Layout, and once attached, they can be moved and rotated—with the object following the movements accordingly.

For our example, we'll use Bones to make an object walk. First, we need to create an object—in this case, simply the letter "M." Create the M by using the Text button from the Object menu. LightWave's default font (Olnova-Bold) makes a good M for this example. Type M into the Text field, click OK, and your M will be displayed in the Modeler window. Give the object some depth by accessing the Extrude option from the Multiply menu. Since Bones distorts the object, use the Triple and Subdivide commands under the Polygon menu several times to give the object a sufficient number of polygons. Save the object and return to Layout.

Go to the Object menu, load the object, and then click the Object Skeleton button—which adds the bones to the object. Our example uses two bones, one for each side (or "leg") of the M, so start by clicking the Add Bone button. The Bones In Skeleton box displays 1, and Current Bone shows the name "Bone." Use the Rename Bone button to change the name to "LeftBone." Now repeat the process, using Rename Bone to designate "RightBone." Leave all the other parameters at their default values, and click Continue to return to Layout.

Next, you must place the bones. Make sure Current Frame is set to 0. Click the Bones button under Edit, and then select LeftBone. Move the bone until it is positioned at the bottom center of the left side of the M. The outlined bone will now appear, almost ghosted, in the Layout window. Once in place, press the R key to make the bone take on a more solid appearance. Pressing the R key puts the bone into its "Rest" position—the initial position where it can begin to exert influence over the object. Finally, make a keyframe for the bone. Repeat the entire process for RightBone, placing it at the bottom center of the right side of the M. We are now ready to animate our M.

Set Current Frame to 15. Make sure the Bone button under M is still depressed. Position the LeftBone to about –5 along the z-axis—either using the Layout window or via the Numeric Input requester. Soon you will see the left leg of the bone thrust forward (when looking at it through the camera view). Now create a keyframe for the LeftBone (and another one for the RightBone—it should still be in its original position). Set Current Frame to 30 and select RightBone. Move it to about –9 on the z-axis. Make a keyframe for the RightBone. The Layout window should show the right leg thrust in front of the M. (See Figure 5 for an illustration of these positions.)

Now it's time to see what we've created. Make sure you have the Camera View selected. Go to Preview and select Make Preview. Be sure to create the preview in Wireframe mode, as Bounding Box will not show any object distortion. After the preview generates, the Preview Playback controls will appear. Play the preview, and you will see the M marching toward you.

If it appears that the center of the object has been distorted too much, you can add another bone to the middle of the M. Make this bone bigger than the others, since the larger the bone, the more influence it has over an object. You can also control a bone's influence by selecting the Limited Range option. Using this parameter and setting a value in the Influenced Range allows for more precise control over object movement.

There are many ways to make this simple example into something more complex. Add keyframes between the "steps" where the bones are moved higher, causing the legs to bend more. Alter the time between the keyframes to change the timing of the steps. Add bones to the top of the M to make it twist and turn, as if it were "looking around."

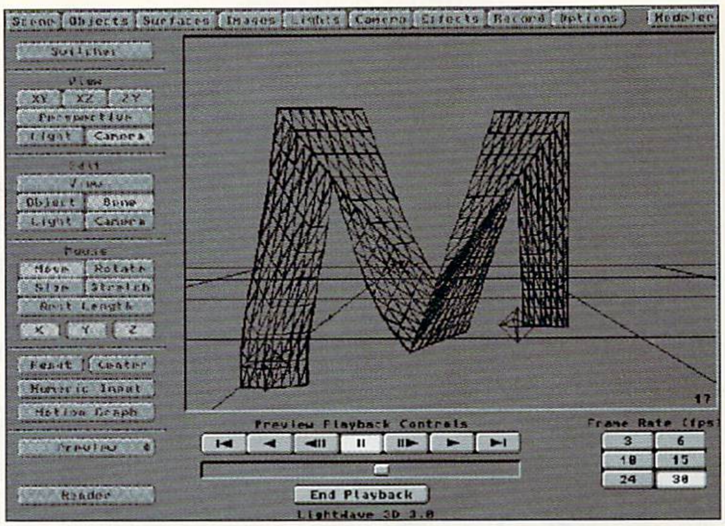


Figure 5. LightWave's new Bones feature allows you to create objects that you can then animate with smooth, realistic movements.

You can also add bones to a displacement-mapped object—setting up some really interesting effects. Remember, too, you can save the object in its altered state, using the Saved Transformed option, and then load it into Modeler for more editing. The possibilities are almost endless.

The techniques outlined in the examples above should give you a better understanding of some of the new Toaster 3.0 software features. But don't be afraid to try new ideas or techniques you haven't used before. If you see an interesting effect on video or television, try to re-create it. You may be amazed at how simple some of these effects are. While, by themselves, the techniques presented in this article will not make you a CG/LightWave expert, they should point you in new directions for further experimentation. ■

*Dave Thomas is owner of Moving Pixels, a computer-based production company. He creates music and 3-D animations for both broadcast and nonbroadcast clients, using the Video Toaster extensively. You can write to him c/o **AmigaWorld,** Editorial Dept., 80 Elm St., Peterborough, NH 03458, or contact him on GEnie (D.Thomas32) or through the Internet (KDThomas@netcom.com).*

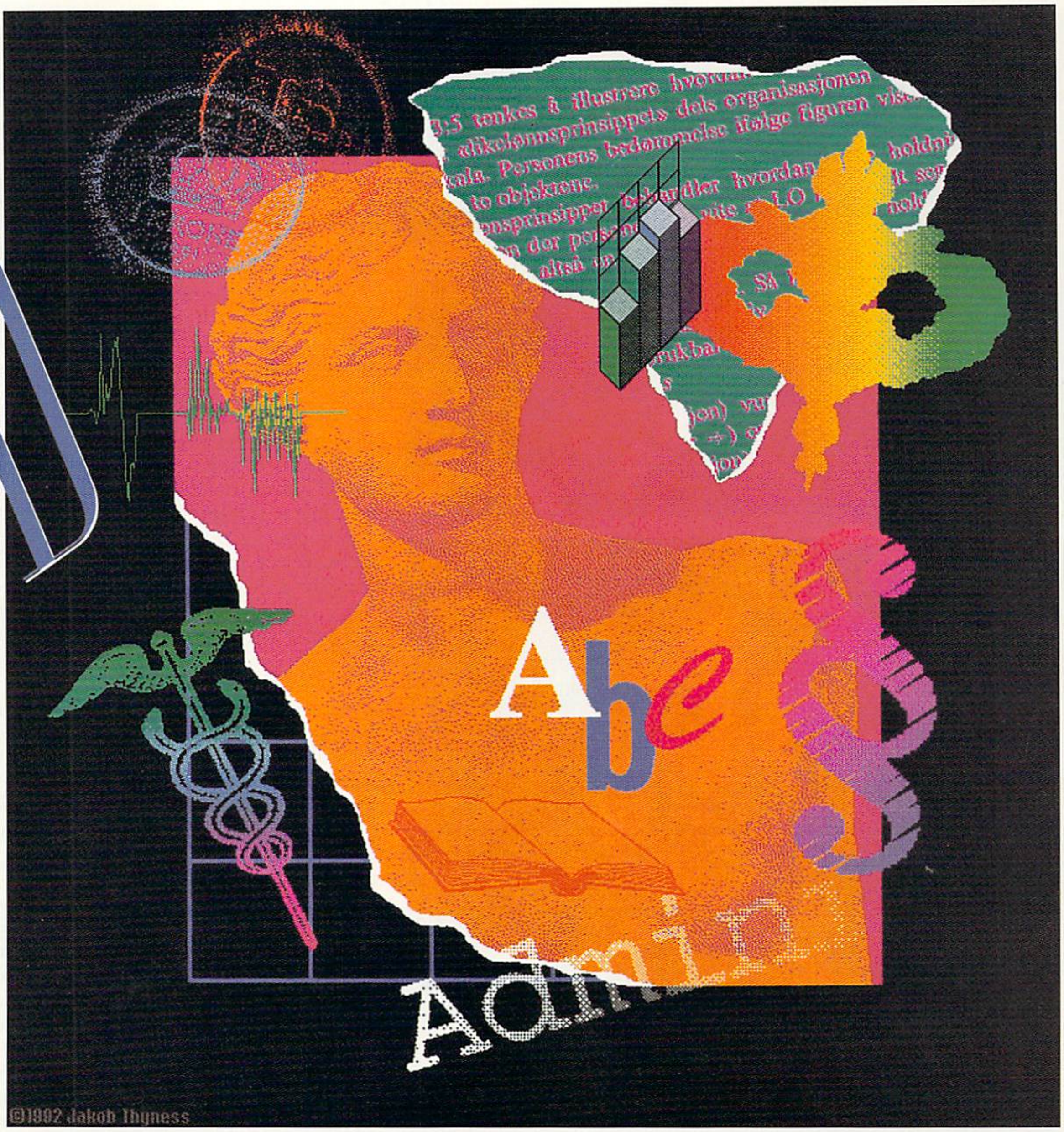
PUT YOUR BEST PRI
FORWA

Tips for obtaining top-quality graphics hardcopy

BY BONNIE DALZELL, MA

BY TRADITION, artists are masters of their media. In trying to transfer a picture from screen to paper, though, you may feel that you're not quite in control. This translation is the biggest hurdle a computer artist faces. While fighting the printer will only generate a poor-quality result, you can produce better hardcopy by learning the limitations of the printer and designing a graphic that is rendered well in that medium.

Of course, cost is one determinant of graphics quality: The best methods of printing are expensive, and most of the more affordable output devices on the market cannot reproduce the



readth of color you see on screen. Perhaps more vexing still, he technology itself creates an additional, unexpected roblem: The process of printing actually introduces a ariety of artifacts into the hardcopy image.

How can you take advantage of your Amiga/printer setup as n artistic tool while judging its limits as a medium? A number of ariables affect the appearance of artifacts in a finished raphic. Let's examine them one by one, and discuss some of he hardware and software factors that can make a critical ifference in your printed output.

Except for the image shown above, the figures illustrating this article were produced on a 300 dots-per-inch (dpi) Hewlett-Packard DeskJet 550C color inkjet printer connected to an Amiga 2000. The image-file principles we'll discuss apply to any printer/computer combination, however, and the printing information applies to all inkjet and dot-matrix printers. (I have generated usable graphics on a 180-dpi Canon color inkjet and even an Epson nine-pin dot-matrix.) *(Editor's note: Norwegian artist Jakob Thyness printed the opening image using Canon's FP510, an older, 160-dpi color inkjet.)* ►

ILLUSTRATION BY JAKOB THYNESS / AD NOTAM GYLDENDAL





Figure 1. Top, hardcopy showing pronounced printer artifacting; bottom, hardcopy with fewer artifacts.

True to Form

What exactly are artifacts? In computer graphics, they're unintended horizontal bars, light or dark, appearing in the hardcopy. They're usually most obvious toward the darker end of the middle tones of halftone (printed gray-scale) images. Artifacts are a result of irregularities in the printhead's action, combined with the dithering process—the way dots are applied to the paper in patterns that make up printed images. Only the artist really knows whether an image is supposed to appear dark or bleached out, but almost anyone can figure out that the image was probably not designed with streaks running across it. (See Figure 1 for one example.) To make things worse, artifacts may be enhanced by additional generations of output, such as photocopying or screening for halftone offset printing.

What can you do to influence your printer's mechanical operation? SuperDJC2, a printer driver from Creative Focus, expands your control over the HP DeskJet 550C by adding new items to your Amiga's Preferences menu. Two of these important new variables are shingling, the number of overlapping passes that the printhead makes (controlled by setting the Threshold level in the Printer Graphics requester), and depletion, the number of ink dots applied to paper (controlled by selecting either Letter for zero percent or Draft for 25 percent).

Low levels of shingling produce prints with noticeable horizontal light and dark artifacts; high levels of shingling darken prints, especially those on clay-coated papers (formulated for inkjet printer graphics), owing to a great degree of lateral bleeding of the heavily applied inks. (See the accompanying sidebar "Paper Chase" for details.) Depletion affects only color inks. The two depletion settings did not produce noticeable differences in the test prints I created for this article.

Note that how much you'll actually use these new Preferences settings, however, depends on your image-processing program. ASDG's Art Department Professional, for example, controls most Preferences graphics variables. Black Belt's Imagemaster, on the other hand, accepts your adjustments of these variables to fine-tune all aspects of the final hardcopy, including density setting, which selects degree of black printing, and color correction, in addition to shingling and depletion.

Optical Illusions

Dithering, as noted above, is the pattern in which the little dots that make up a color or halftone image are set down. Most printed images, including magazine and newspaper photographs and fine-art prints, are made up of just such a series of small dots of pigment placed close together. On the Amiga, dithering is controlled by both the printer driver and the graphics-processing programs you're using.

When we view a printed photograph, our vision is normally not sharp enough to separate the tiny dots, so we see continuous tones. But our visual system is also equipped with a specialized scanning capability that makes us sensitive to edges and geometric patterns. (That's one reason it's easier to teach pattern recognition to a mammal than to a computer.)

The net effect is that any sort of regular grid used in producing a halftone or dithered image is usually noticeable to the viewer unless it's operating at a level of 300 points per inch or greater. Since most affordable printers operate at a resolution of 300 points per inch, the grid they use will be coarser and, if it is an ordered grid, noticeable.

To mitigate this effect, a number of schemes that generate random-dot patterns in computer output are available through graphics software. The most common is called Floyd-Steinberg (F-S) dithering (see Figure 2). Note that the F-S picture looks like a stippled drawing, while the ordered picture looks mechanical. This is more obvious when an image contains large areas of relatively solid colors or many horizontals and verticals (as in the foreground section of Figure 2, or the background of the top image in Figure 1) than when it contains many small areas of color, as with the Mandlebrot background of Figure 2.

But even F-S dithering can fall into a mechanical pattern if it's applied over a large area of a single color. In Figure 3, note the four gray rectangles printed with F-S dithering. On the computer screen, the upper left one was solid gray, the upper right had a few black dots scattered within, the lower left had still more scat-

tered dots, and the lower right box was a mixture of black and gray dots. When printed, however, a definite artifact pattern appears in the upper left and upper right squares—a pattern produced by the F-S algorithm. As you can see in the lower left box, you can largely eliminate this by scattering a few dots of a different color throughout the single-color area. It's also much less obvious in color than in halftone prints.

Different software packages vary in the degree to which this problem affects them. In my tests with the unicorn image shown in the sidebar below, F-S prints created with Art Department Professional were less artifact-ridden than those output through Electronic Arts' DeluxePaint IV. An Imagemaster color sample showed almost no evidence of artifacts.

Color Me Blue

Another problem in generating printouts is the change colors undergo when that gorgeous image on your screen winds up on paper. The accuracy with which your image's colors are preserved depends on the type of paper you're using, the composition of the printer's ink, and the capability of your software. Because of color correction in the Commodore printer driver, prints often shift toward blue. And because of the different equations they use internally to translate screen colors to prints, two programs may render the same image in two very different sets of colors.

The most difficult colors to render accurately are human skin tones and sepia and pale-brown hues. In general, when rendering people in "photographic" fashion from a scanned photo or a digitized video image, a straight print of an attractive screen image will result in too much red and too much contrast. You will have to reduce the red, brighten the image, and reduce the contrast and/or gamma to get the skin tones into an acceptable range. This will result in paler colors throughout the rest of the image.



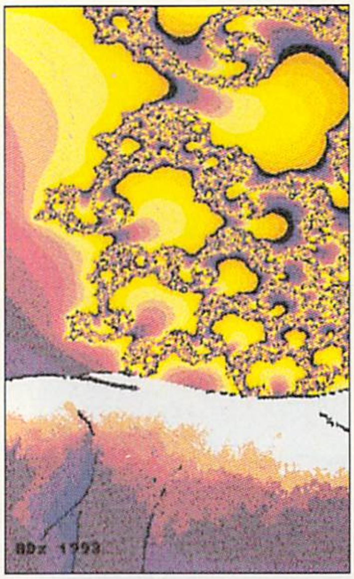


Figure 2. Left, picture printed with ordered dither; right, F-S dither.

If your primary goal is to produce photographically accurate pictures of people's faces in full color, a less-expensive printer such as an inkjet won't be satisfactory. For artistic interpretations of people, however, your computer and printer can generate some dramatic portraits.

Touchups

So maybe you can't get a single printout that's perfect. Remember, you're an artist—the final image can be more than that piece of paper you pulled out of the printer! ►

PAPER CHASE

Papers vary in their ability to absorb ink as well as in their degree of whiteness. If a paper is absorbent, then simple lines, such as type, will "bleed" and appear blurry, losing their crispness. On the other hand, a multiple-tone image will appear smoother and brighter, because the lateral absorption of ink will lessen the horizontal artifacts produced by the side-to-side action of the printhead. inkjet papers formulated for graphics use take advantage of the absorbent properties of a light clay coating to improve the look of a multiple-tone picture.

Typeset material will be unacceptable on such papers. This blurring would also detract from the quality of a line drawing, since the lines and dots would close up and the image darken. To maximize the sharpness of lines, use a paper with an impervious or "hard" surface.

Note in Figure A that the unicorn printed on color inkjet paper has lost a lot of detail owing to black-ink bleed. The gray version looks much better on hard inkjet cotton paper. This paper usually produces light multicolor graphics.

You'll get maximum graphics punch with HP's special plastic inkjet paper (Jet Series Glossy HP51636H). This material has no absorbent properties at all, though. You must handle these prints very carefully until they're dry, and you may see a higher level of printhead artifacting than with other papers. In addition, the prints aren't permanent (HP says an average life of three months before there's noticeable degradation of the image).

Large stationery stores and business and computer superstores usually stock a wide assortment of papers. A number of companies such as Paper Direct also distribute mail-order catalogues and sell at competitive prices. I tested a variety of papers for this article to discover their effects on the final image. My advice: Don't be timid—experiment! The Legacy Strathmore recycled variety, for example, is not sold as an inkjet paper, but we achieved excellent results with it. Our workaday inkjet paper is Hammermill Laser Print white. It's a hard paper with relatively little lateral bleed, and it's inexpensive. □

—BD





Figure A. Top, black ink on clay-coated color inkjet paper; bottom, black and gray tones on hard cotton paper.

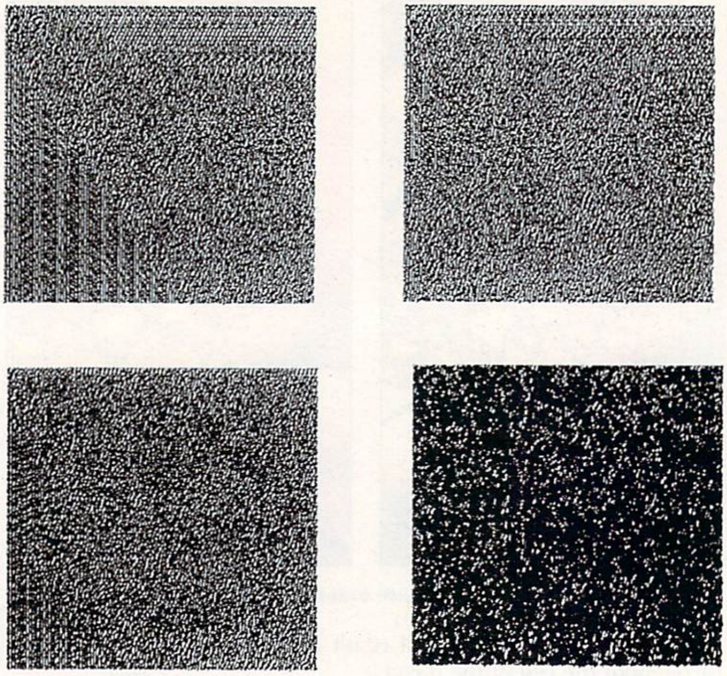


Figure 3. Four gray rectangles printed with F-S dithering. Upper left, solid gray, showing artifacts; upper right, with a few black dots scattered within, showing artifacts; lower left, with many scattered dots, eliminating artifacts; lower right, mixture of black and gray dots.

So what if different parts of the image need different settings. Print one of each, cut out the relevant parts, and create a collage from the two images. Don't be afraid to use a few judicious strokes of a pen, pencil, or paintbrush to touch up some small irregularities created by the limited resolution of your printer or primary image.

You can increase the density of black tones dramatically by running your printout through a good photocopier. If you've got large areas of black, try photocopying them and making a collage with color output for increased impact. Another hint: Because color prints have fewer artifacts, the best halftone images are produced by printing the file as a red- or blue-tone image and then making a photocopy.

A third technique that improves printouts starts with two copies of your image, one on clay-coated paper and one on inkjet transparency film. For the final exhibition print, align these two prints carefully, sandwich them together, and mount them to enhance the depth of the colors.

As for basic design tips, remember that computer-printed images, like all other artwork, can be stark with strong contrasts or subtle with smooth transitions of tones and shades. Images that will be reduced in final output or that will be viewed at a distance benefit from enhancement of contrasts. Images that are going to be enlarged or viewed closely require special attention to smoothness and detail.

As in any type of mechanical reproduction from original artwork, the process of moving from screen to paper will increase contrast and compress tones at the light and dark ends of the scale: Light areas will become lighter and lose subtle distinctions; dark areas will become darker and "close up," also losing distinctions. The solution is to create the graphic so that these changes are part of the final design. For example, render stipples in lower density because they'll close up and darken in the final print.

Roll the Presses

No matter which particular hardware or software you use, knowing the pitfalls and the possibilities can help you achieve the graphics output you intend. And that's what being master of the medium is all about. ■

Bonnie Dalzell, MA, is a published natural-history and science-fiction artist who has taught anatomy to medical and veterinary students. Write to her c/o ***AmigaWorld*** *Editorial, 80 Elm St., Peterborough, NH 03458.*

How Permanent Are Prints?

One advantage of digital images is that you can copy them over and over with no loss of quality. Through the ages, however, artists working on paper, canvas, and film have had to deal with the problem of fading pigment and deteriorating physical media. Much of the training of a fine artist is in the physical properties of the medium he or she chooses.

Colors are usually the products of either pigments or dyes. Dyes disperse in liquid and soak into the medium of reproduction (such as paper, gesso, and so on), while pigments are particles of material carried in a binder that stays on the surface.

The intensity and stability of dye colors is a science in itself. Bright yellows, purples, and reds are usually the least stable dyes. Blacks, sepias, rust reds, and ochres of natural oxides are among the most stable pigments. It's no surprise that these are the colors we see in ancient cave paintings; the painters may also have included bright purples and reds, but those colors have long since oxidized to invisibility.

What about printer inks? Inkjets and dot-matrix devices use dyes; laser prints use pigments. Although I couldn't get exact statements as to the permanence of the DeskJet inks, HP did tell me that the more thoroughly the ink soaks into the paper, the longer the colors will last, as they are less exposed to air.

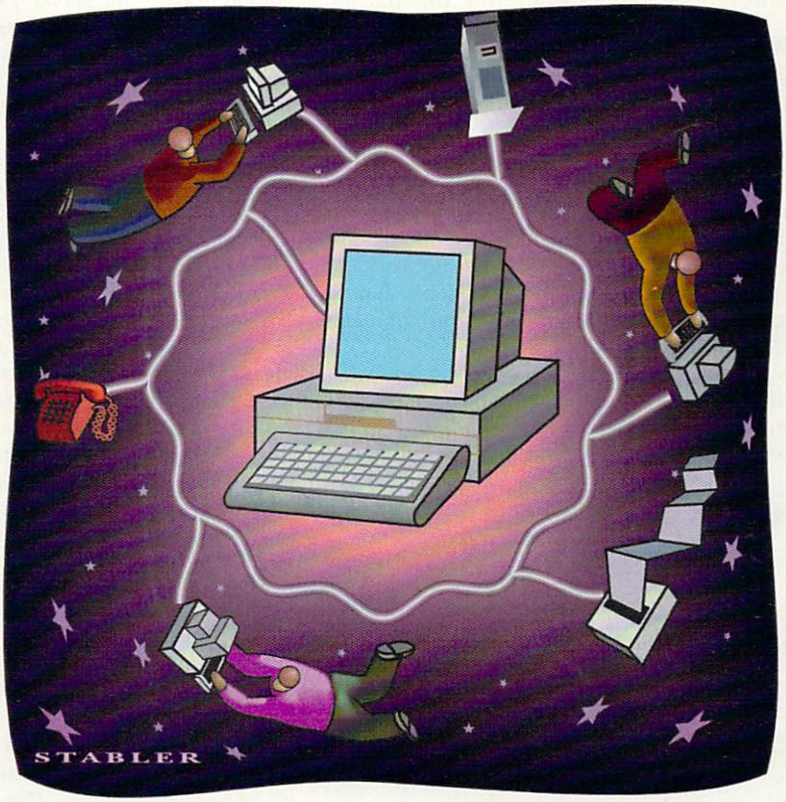
The gorgeous prints made on HP'S special glossy plastic paper must be protected from exposure to air and sun if they are to last. Treat them as special images printed for a particular purpose. Keep them in a protective envelope and don't hang them where light will fall directly on them.

General principles for protecting water-color images from fading should be applied to color inkjet and dot-mtrix printouts. Use a covering; don't expose them to direct sunlight. If they're framed, seal the back to reduce air circulation; use ultraviolet screening glass on the front. Special paper coatings, such as the fixatives used by artists working with pastels, may also help, but I haven't experimented with them very much.

If your final artwork is a halftone or black-and-white reproduction, consider making a high-quality photocopy. As with laser printers, the pigment used in photocopiers is carbon—heat-fused to the paper. This is considered an excellent archival imaging process. A carbon-toner photocopy should hang in there as long as the paper. Pick an acid-free, high-rag-content paper and you'll have a long-lasting print. ☐

—BD

NET GAINS



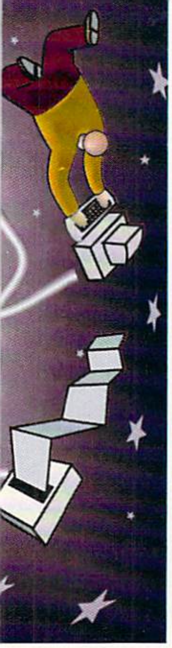
Increasing power and flexibility by sharing peripherals and resources is what networking is all about. We'll show you what's involved and the products you'll need to hook up to all kinds of networks.

EXAMPLES OF NETWORKING are all around us: telephone service, broadcast media, lending libraries, even your own central nervous system—and, of course, computers. Whatever the network, the basic idea is the same: the connection of related components for the purpose of sharing information. If you want to use your Amiga to communicate with another computer or to obtain information from it, you'll have to become part of some kind of network.

To show you how to make the *right* connection, we'll explore a variety of network types that can accommodate your Amiga, and how each kind may benefit you. We'll also take a look at the products that can help you get involved—ranging from public-domain programs to sophisticated, specialized third-party equipment. In addition, we'll examine specifically how some of these products were used to set up the trial networks presented in this article. Finally, we'll discuss some of the changes that are underway, because Amiga networking is expanding even as you read! ►

BY JIM DUTTON

ILLUSTRATED BY BARTON STABLER



If, along the way, you come upon terms you do not understand, look to the accompanying sidebar glossary "Net Wording." For details on the hardware and software mentioned, see the "Product Specs" sidebar; to contact the vendors of these products, see the "Manufacturers'/ Distributors' Addresses" list on p. 90.

THE BASICS

The world of computerized information exchange is divided roughly between LANs (local-area networks) and WANs (wide-area networks).

A LAN is a set of computers that are physically close and use a special connection medium (cables) and software to provide for and manage the connectivity. A LAN can be Amiga-only, or it can include other types of computers. It can be a peer-to-peer network, in which all participating computers are equal (that is, none depends on any other for any function), or it can be a client/server setup: one or more powerful units with specialized roles, plus various attached nodes.

One common use of LANs is for sharing a single printer among multiple computers—without myriad switch boxes that must be set manually. The shared printer is usually connected to one computer (the "printer server"), which runs special software to receive print files from the other computers and manage the actual output to the printer. Another popular application is the sharing of a large hard drive on one computer (the "file server") so that people using other computers can store and access files on it. One advantage of such a setup is that "diskless workstations" (computers without hard drives) get the benefit of hard-disk space. LANs are also used for various types of distributed computing—such as the "rendering farm." Here, multiple Amigas work simultaneously on a very large animation or graphics-rendering project in chunks.

LANs based on Ethernet, Novell Netware, AppleTalk, and other protocols require a connection medium different from the specially wired RS232c cable used for ParNET setups. LANs use coaxial, 10BaseT, or other types of cables, or even "phone-line wiring," known as twisted-pair wire (shielded or unsheilded). LANs also include advanced software offering access to more resources than ParNET, in addition to security and accounting features not available on any one computer alone.

A WAN spans a wide geographical area and involves computers of many different platforms. The area may cover a few buildings or even an entire campus, city, state, or country. The Internet is a good example of a wide-area network, though with its expansion across the continents, it is now often called a global network. Commercial dial-up services (such as CompuServe, BIX, GEnie, and Portal) are other examples.

WANs usually require more or larger intermediary components than LANs, and are normally centered around one or more mainframes. Again, special advanced software—often more complex than LAN software—handles communication with hosts or nodes on wide-area networks. The physical hookup may also be complex; entire rooms are sometimes dedicated to WAN interconnection equipment alone. Just think of the volume of equipment needed all over the country just to establish the telephone network!

WHAT CAN YOU DO?

All Amiga users can purchase modems and telecommunications software, and use existing telephone networks to "talk" to other computers that provide for dial-up connections. In some cases, your software must be able to emulate a particular type of terminal (DEC VT100, IBM 3270, or ANSI, for example) to work with the remote host/system. The network functions are services available to computers dialing into the particular host/system: message posting, file upload/download, newspaper "clippings," on-line conferences, remote interactive use of a mainframe, and so on.

All Amiga users can also obtain the two current public-domain versions of Amiga TCP/IP software (AmigaNOS or AmiTCP) to become a part of the Internet with a "SLIP" connection to an Internet host. (For details, see "Cruisin' the Internet," p. 65, Jan. '94. Beginning Internet users may also want to consult Brendan P. Kehoe's *Zen and the Art of the Internet*; Prentice Hall, ISBN 0-13-010778-6.)

All Amiga users can obtain a copy of the public-domain software ParNET or Amigo Business Computers' Multinet package, and make or purchase the required RS232c cable(s) to connect the computers together. Note that ParNET connects only two Amigas, ►

A SAMPLER OF NETWORK SETUPS

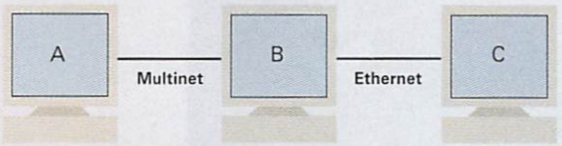


Figure 1. Amiga-only parallel-port net.

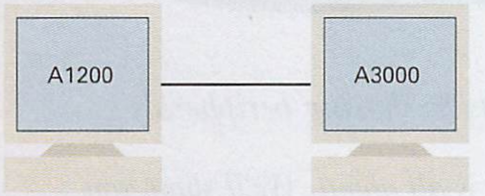


Figure 2. Ethernet only.

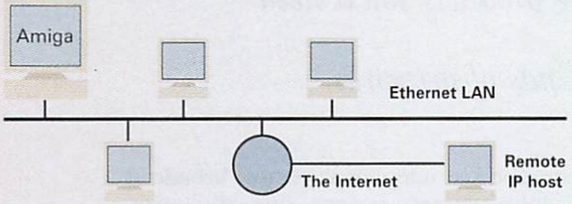


Figure 3. Internet via Ethernet.

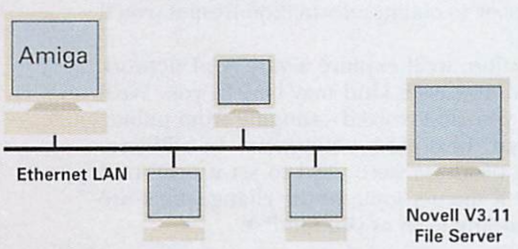


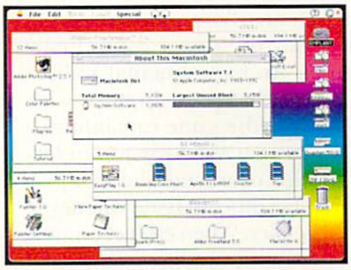
Figure 4. Mixed platforms.

The World's First Multi-Platform Emulation System!

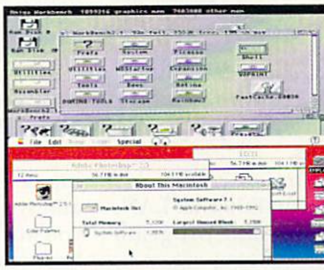
EMPLANT™

EMPLANT is a state-of-the-art hardare board that is the foundation for emulatiing virtually any computer made today. A simple software driver and ROM(s) from the computer to be emulated are all that is required! Custom programmable logic allows the EMPLANT hardware to actually become the exact hardware of the computer it is emulating! Multiple emulation modules can be run *at the same time* using a single EMPLANT board!

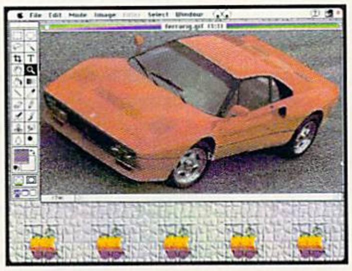
AppleTalk, printer, midi, and modem support can be provided through the two RS-422 serial ports. A high speed SCSI controller allows any SCSI device to be plugged directly into the EMPLANT hardware (including scanners, SyQuest drives, hard drives, CD-ROM drives and more!). The serial ports and SCSI interface can be used by Amiga programs and emulation modules *at the same time!* The EMPLANT hardware is a standard Zorro II/III plug in card for the A2000/3000/4000 (A500/1000 owners need a Zorro Bus adapter in order to use EMPLANT). A PCMCIA version for the A600/A1200 will be available in the near future.



Typical Mac emulation screen.



Multitasking! Just flip or drag down the emulation screen!



Adobe PhotoShop on your Amiga!

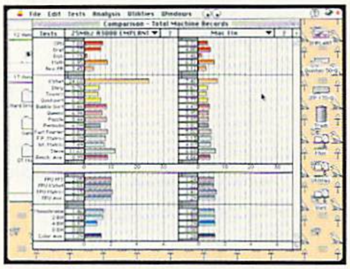
FAST, FULL COLOR, STEREO SOUND, MULTITASKING MACINTOSH EMULATION!

The Macintosh emulation is a 'generic' Mac, with speed based upon what Amiga system EMPLANT is installed in. An A3000 is equivalent to a Mac IIci, and an A4000 is equivalent to a Quadra 700! **Don't be fooled** by other emulations using old 64K or 128K ROMs, **only 256K ROMs** (or later) provide support for color, stereo sound, ADB devices, and NuBus expansion, all of which are emulated by the EMPLANT hardware and/or Mac emulation module! Due to the magic of the EMPLANT hardware, Mac software that accesses Mac hardware registers directly **will** work!

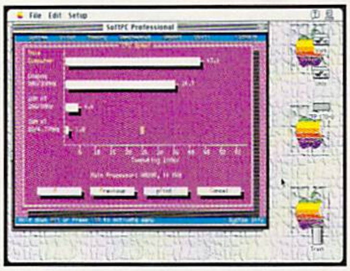
Support for up to 16 colors is provided for non-AGA machines. A4000 owners can use a full 256 colors! Support for Picasso II, EGS-28/24 Spectrum, Piccolo, Merlin, and Retina video boards is **available NOW!** Support for other video boards will be available soon! Imagine running PhotoShop in MILLIONS of colors on your Amiga! Now, imagine being able to 'flip' back to the Amiga side or drag down the Mac emulation screen! The Mac emulation (like all emulation modules being released for EMPLANT) fully ***multitasks*** with the Amiga! Now, install one of the above mentioned video boards and imagine the ability to play double-size QuickTime(tm) movies (with full stereo sound) FASTER than the equivalent speed Mac! The Mac emulation module *requires* an accelerated Amiga - 68020, or a 68030/68040 w/MMU) and 256K Mac ROMs (not provided).



24 bit video board support!
(Picasso II video shown)



"Speedometer" comparison.
(A3000/EMPLANT vs MAC IIx)



Run PC software on your Mac!
(SoftPC Pro 'SI' rating shown)

FUTURE EMULATIONS!

Since the EMPLANT's hardware is so versatile, a completely different computer can be emulated by just changing the emulation software patch and the ROM(s). Apple][/+/e, Mega ST, IBM AT (386/486), C64/128, Atari 400/800, and even game machine (Genesis/SNES) emulators are planned in the near future...EMPLANT is not limited to a single emulation!

PRICING

BASIC EMPLANT system - Emulation hardware and software - $279.95
OPTION 'A' - BASIC EMPLANT system with dual high speed serial ports/AppleTalk support - $349.95
OPTION 'B' - BASIC EMPLANT system with high speed SCSi interface - $349.95
DELUXE - BASIC EMPLANT system with both serial AND SCSI options - $399.95
Shipping & Handling - $10.00 per order (All orders shipped via UPS Blue/2 day service)
C.O.D. Fee - $5.00

All EMPLANT packages described above come with Mac emulation software and necessary device drivers. ROM(s) are not shipped with this product. Sources available upon request.

Utilities Unlimited, Inc.
1641 McCulloch Blvd Suite 25-124
Lake Havasu City, AZ 86403
(602) 680-9004 - Voice
(602) 453-6407 - FAX
(602) 680-9234 - Technical support
(602) 453-9767 - 24hr BBS (v32bis)
Dealer inquiries welcome!

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Circle 159 on Reader Service card.

while Amigo's Multinet can connect up to 16. The primary network function is local access to a remote filesystem—drawers and files, for example. (For more on ParNET, see "Double for Nothing," p. 39, Oct. '93). Amigo's Multinet also provides one additional function: It lets you open a CLI on another networked Amiga and execute commands on that remote node.

As far as we know, there are no networking cards for the A500, but users of all other Amiga models can purchase an Ethernet card (from Amigo Business Computers or Interworks for the A1200 and A600; from ASDG, Commodore, or Ameristar for A2000/A3000/A4000) and Amigo Business Computers' Ethernet, Interworks' ENLAN-DFS, or Oxxi's ACS Novell client software to become part of a LAN. The network functions here would be client/server-based, providing for printer servers and file servers (data and/or programs), and sometimes other types of servers.

With an Ethernet card, your Amiga could also become an Internet Protocol host on an Ethernet LAN, using the experimental public-domain program AmiTCP, a TCP/IP package that allows you access to other IP hosts, either on the same LAN or on whatever network that LAN connects to. This setup would give you FTP (File Transfer) and Telnet (interactive log-on) capabilities. So far, a readily usable SMTP (Internet mail) agent is not available for AmiTCP, so e-mail is not quite there yet. (While AmigaNOS does have a working SMTP agent, it does not support Ethernet cards.)

In the Amiga-only scenarios, Amigo Business Computers' Ethernet and Interworks' ENLAN-DFS software, filesystem access is not to or from a server, but between workstations connected to the network. That means direct access to another system's files; it differs from a file-server arrangement, where users access the same files indirectly and only the server can actually tap into its own filesystem. An experimental public-domain network filesystem designed for use with AmiTCP is reputed to provide the same capabilities.

Ethernet-connected Amigas can also form a "rendering farm." The network helps overcome the memory and system limitations that become an issue whenever you work with multiple large files. When each computer has completed its task, the output can be saved locally

NET WORDING

HERE ARE DEFINITIONS for some of the networking terms used in this article. If you need more information, I recommend Alan Freedman's new book *Computer Words You Gotta Know!* (AMACOM, ISBN 0-8144-7814-X).

AppleTalk
A proprietary LAN protocol developed by Apple to connect Apple computers and peripherals. It supports several "network layer" protocols: LocalTalk, EtherTalk, and token ring. LocalTalk operates at 235Kbits/second.

Arcnet
A network design dating from about 1989; not as prevalent as other network toplogies. It is reputed to operate at about 2.5Mbits/second and is billed as an economical alternative to Ethernet and token ring.

Client
A host that requires a server of some type to perform certain functions. In performing a database inquiry, for instance, a client would call a database server to do the work of locating, retrieving, and returning the desired information.

Ethernet
A LAN topology based on a bus design using CSMA/CD, a "wait-and-see" method for determining whether the network is free for use. It operates currently at a maximum speed of 10Mbits/second, but a newer high-speed Ethernet is being developed to run at 100MB per second. Ethernet is popular in many academic environments, and is also referred to as 802.3, its designated Internet (IEEE) Protocol standard.

FTP
File Transfer Protocol. A communications standard and method for direct file transfer from one IP host to another. It is also a TCP/IP "command," and allows for transferring archived files in binary format or nonarchived files in ASCII format.

Gateway
An individual host or a host's task that converts one data format to another. For example, some mainframes have their own proprietary mail-file format, and other hosts that don't use the same format may not be able to read its mail. By utilizing a software package that understands each file format necessary, users from the different hosts can then exchange mail through this gateway.

Host
A computer/workstation/PC that can use the facilities of the network to which it is connected (for example, performing file transfers via a specific networking protocol such as FTP). A host or node may be nothing more than a client, but it can be a server, both a client and a server, or even more (a network router or mailbox server, for example).

IP
Internet Protocol. A network layer or "language" that defines how certain network packet handling will be performed; it also identifies what services other network layers or application programs can expect. TCP/IP is a network scheme made up of different layers, IP being the "lowest" or closest to the network interface card. Most other TCP/IP functions use IP services to properly interact with the connected network.

IP Host
A workstation or computer executing an implementation of TCP/IP software, currently defined with an appropriate IP address and hostname and connected to a TCP/IP- (or IP-) based network. This "host" can perform any TCP/IP function (such as Telnet, FTP, or FINGER) that its specific implementation allows. The computer may be either a client (initiating a service or function request) or a server (responding to another client's service request). An IP host is simply a host (computer/workstation) that is on an IP network—one that uses TCP/IP as its "networking language." It is assigned a specific IP (network) address such as 134.84.132.2 (boombox.micro.umn.edu).

Netware
A popular network-environment package produced by Novell and used predominantly in the MS-DOS world. It is considered a "high-level" or "network-layer" protocol that

or on a large file server. Locally stored files can then be accessed by a single Amiga for review or for other processing.

Some Real Setups

In exploring the various Amiga products mentioned here, I tested several types of network setups.

1. Amiga-Only Ethernet/Multinet

The first setup looked something like Figure 1. It allows a very simple parallel-port network to connect with an Amiga-only Ethernet network, providing for file sharing.

Amigas A and B were connected via their parallel ports using Amigo's Multinet product, an RS232c adapter, and an RS232c cable. Amigas B and C were connected via ThinNet, ASDG Ethernet boards, and Interworks' ENLAN-DFS software.

Amiga C exported the volume Games, read only, which Amiga B then imported (via ENLAN-DFS). Amiga A used the Multinet Make.Node command to "mount" from Amiga B the renamed version of machine C's Games volume. Because Amiga C exported the volume in read-only mode, A was also limited to read access.

Using Multinet's Make.Node command, Amiga B mounted A's Work volume. Since there is no access modifier with Make.Node, Amiga B had read/write access to this volume. Amiga B then exported A's Work volume, specifying read only. When Amiga C imported B's copy of Work, it had read-only access to the volume, while Amiga B (and A) had read/write access.

Full access to the volumes in question was available to all Amigas, even though they were connected using two different networks, and no network definitions were made to identify either network to the other.

The connections were managed by different handlers/processes in each Amiga, which cooperated (communicated) properly, allowing one network to appear as an extension of the other. This is interesting, as most major network protocols do not cooperate with each other that well. (For example, you normally wouldn't be able to connect an Ethernet card directly to a token-ring network.) In both cases, the people using the computers had to know the names of the volumes on the ►

provides for some specific services (such as file servers), and is used to create LANs. Like the "lower layer" topologies, Novell Netware does not directly support other formats such as Banyan Vines.

Node
See *host*.

Peer-to-peer
A design methodolgy wherein two or more hosts can interact with each other at the same level, unlike client/server design (which used to be called "master/slave") or a mainframe and its many terminals. Peer-to-peer hosts have the same abilities and do not depend on another host for their network functions.

SANA-II
A specification for Amiga device drivers that communicate with network interface cards or other Amiga devices (such as the serial.device). A SANA-II driver acts as a gateway between the device and the network applications program, so that the application does not have to deal with the specific organization and operation of the device. SANA-II is a Commodore-specific set of network standards that many developers and companies are beginning to use, thereby creating a world of "standard interfaces."

Server
A network host that performs specific capabilities or functions on behalf of other network hosts, which are referrred to as clients. In most cases, a server has a particular role; a file server, for instance, stores files on its hard drive for other users.

SLIP
Serial Line Internet Protocol. A standard for using a serial (dial-up) line as opposed to a direct connection (such as a cable or dedicated wire) to connect with another IP host. This allows a remote host running TCP/IP software with SLIP support to become an IP host as if it were locally attached to a TCP/IP network or the Internet.

SMTP
Simple Mail Transfer Protocol. A TCP/IP protocol established to provide a simple mechanism for exchanging basic mail files between IP hosts. The Internet specification for SMTP describes a series of handshaking steps that must be performed and acknowledged, much like other widely known file-transfer protocols, including Kermit and Xmodem. The format of the mail files that SMTP was designed to handle is known as RFC822, for the Internet document that lays out the data format for the mail file.

TCP/IP
Transmission Control Protocol/Internet Protocol. Often referred to as a "protocol stack" or "suite," this is a set of communications standards approved by the Internet Engineering Task Force for cooperative processing between similar and dissimilar hosts or computers. The specifications' many "layers" follow the International Standards Organization's OSI model. Certain specific functions are required of all TCP/IP implementations, with Telnet and FTP being the most widely known.

Telnet
A TCP/IP protocol (specified by the Internet standard RFC854) providing for interactive log-on/log-in to an IP host. The DEC VT100 terminal type is normally used for the connection. The protocol provides for some terminal emulation negotiation, which allows both sides of the connection to make some adjustments (such as echo or line mode) in how the connection session will be handled. Telnet connections use whatever interactive log-in conventions are required by the remote host (that is, user/account ID, user/account password).

ThinNet/ThickNet
ThinNet is a small coaxial cable specified as 10Base2, also called CheaperNet. ThickNet is a larger/regular coaxial cable referred to as 10Base5. Both types of cable impose limitations on the distance between stations. □

—JD

other machines before being able to use them. Each network had its own naming method, which sometimes became confusing.

2. Ethernet-Only

Figure 2 shows the second test setup, which allows multiple Amigas to share volumes and drawers more quickly than serial- or parallel-based networks. Each computer had to "serialize" its Amigo Ethernet disk; that is, it read the burned-in IEEE ROM address on the Ethernet card and modified the Ethernet software so that it would identify itself as belonging to a specific Ethernet card.

Then on each computer I created a Devs:Enet-configuration file, containing the Ethernet ID, a network name (referred to as Device Name), and a default directory for each machine. Amigo's Ethernet setup includes two commands—Enet-Services and Enet-Config—that bring up the network connections, making this prep work much easier than Multinet's.

As in the Ethernet/Multinet trial, I tested file and program access from both sides. In addition, I tried the Amigo Ethernet CHAT command, which provides for an interactive typing window on both systems. Both machines used the command, so four windows in all (two on each machine) were open.

This is a very handy capability, though it might get in the way of either party using his or her own system, because CHAT *forces* a new window to open on the second system—and makes it the active window. Otherwise, this is a nice feature.

Amigo Business Computers' Ethernet offers a few other features as well, including a printer-control utility (pseudo printer-server capability), remote command execution, and remote CLI; the latter two require new entries in each machine's MOUNTLIST.

PRODUCT SPECS

HERE ARE DETAILS on Amiga networking products, divided between software and hardware. Original sources are listed for noncommercial software; you may also find these products on commercial networks, BBSs, and so forth.

SOFTWARE

Amiga Envoy
$59.95 (two-user site), ***IAM***
• requirements: AmigaDOS 2.04, 512K RAM, SANA-II-compatible networking hardware, and SLIP (serial port).
• standard Amiga-only peer-to-peer networking software providing a simple messaging interface for the development of network applications; included applications enable connected Amigas to share hard disks, CD-ROMs, and printers transparently.

AmigaNOS 2.9 M
Public domain (available from 130.88.200.4 via anonymous FTP) by John Heaton.
• requirements: modem, terminal software.
• provides complete TCP/IP protocol stack/suite, including SMTP (client and server)/DIGGER, Telnet (partial/pseudo DEC VT100), FTP/TCP/IP/UDP, NNTP, POP2 (client), RIP/RSPF/ARP, Mailbox/Chatnode, TTYlink, SLIP/PPP (with Van Jacobson header compression), FINGER, ECHO/DISCARD/PING, NETROM/KISS/AX25 (HAM radio), HOPCHECK, Rlogin, and amenities such as mem, shell, pwd, cd, dir, help files via Less, extensive statistics, and internal multitasking.

Amigo Ethernet
$325 (for three systems), ***Amigo Business Computers***
• requirements: Ethernet boards, 50-ohm terminators, BNC T adapters, coaxial cable.
• provides peer-to-peer connectivity between Amigas, including filesystem access (drawers, files), always read/write, print spooling, printer control, remote execution via remote shell (not single line at a time), interactive chat windows.

AmiTCP 2.0
Public domain (available from various Internet "Aminet" hosts) by multiple authors.
• requirements: modem and telecommunications software, or (SANA-II) Ethernet card.
• provides necessary TCP/IP protocol stack/suite: Telnet (DEC VT102 emulation provided by included Napsaterm program), FTP/TCP/IP/UDP, SLIP/CSLIP/PPP (header compression in CSLIP), PING, ARP, and various other amenities, including an ARexx interface and SANA-II drivers/compliance.

CBM AS225
Commodore (now under license to Interworks and Oxxi)
• requirements: Ethernet card.
• provides full TCP/IP protocol stack/suite, with NFS (Network File System), Telnet (DEC VT100 emulation), FTP/TFTP (Trivial File Transfer Protocol), ARP, FINGER, Host Table Lookup, PING/TCP/IP/UDP.

Amiga Client Software
From $199, ***Oxxi***
• requirements: Ethernet card, Novell Netware 2.15 or later, cabling.
• provides full Novell client functionality at version 2.15 level, including file storage and file management on file server, file printing on print server, log-in management/security, network accounting, loading of Workbench from file server, simple interactive messaging, and network statistics/data.

ENLAN-DFS 1.0
$349, ***Interworks***
• requirements: Ethernet card.
• provides "peer-to-peer" connectivity between Amigas: filesystem (drawers, files) access with control (read only, read/write), NIC (Network Interface Card) statistics, remote execution (single line at a time, remote CLI), username/password access control.
• comments: Version 2.0 will add SANA-II compliance and an ARexx interface and will require AmigaDOS 2.0 or later plus 1MB RAM and cabling.

Gopher 1.7
Public domain (available via anonymous FTP from newgate.demon.co.uk) by Graham Walter.
• requirements: AmigaNOSGW version 6 (also available from Graham Walker), AmigaGuide.
• provides a GUI-based (Internet) Gopher client.
• request Gopher servers for files and/or services offered.

3. Ethernet/Ethernet LAN/Internet

The third setup looked something like Figure 3. This scenario allows an Amiga to participate in a heterogenous network (namely, Ethernet), and use that network to reach the Internet. I was able to define the Amiga as an IP host (using the appropriately assigned IP address and host name provided by the LAN adminstrator), connect to the Ethernet LAN via AmiTCP, and then FTP or Telnet to another IP host. Some of the hosts tested were local to a university network (of which the Ethernet LAN was just one component), and some were remote IP hosts, outside the university's network (on the Internet).

While AmiTCP comes with a terminal program (called Napsaterm) that emulates a DEC VT102 terminal, it provides just the TCP/IP protocol stack and not many of the other TCP/IP applications (such as SMTP). It does use Commodore's SANA-II device-driver specifications, however, which can prove useful. (ASDG provides its own SANA-II driver for the EB920 card, which was required to make this connection work.) It is expected that AmiTCP and externally developed TCP/IP applications packages will continue to mature and expand.

One caution here: TCP/IP applications developed for CBM's TCP/IP software may not be compatible with AmiTCP.

4. Amiga as Netware Client

My fourth trial, depicted in Figure 4, had an Amiga participating in a Novell network with workstations on other platforms. The LAN administrator created a Netware user ID and allocated some disk space for testing. I installed Oxxi's Amiga Client Software (ACS) on the Amiga, and then loaded the required Netware "key" from the Amiga to the file server. The Amiga ►

Multinet

$250, ***Amigo Business Computers***

• requirements: RS232c cable(s), T adapter(s), RS232c interface adapter(s).

• supplied: one T adapter, one RS232c interface adapter.

• provides peer-to-peer connection between two to 16 Amigas, with read/write filesystem (drawers, files) access, remote access to other system devices (for example, PRT:).

ParNET

Freely distributable by Doug Walker/Software Distillery.

• requirements: RS232c cable, T adapter, RS232c adapter.

• provides peer-to-peer connection between two Amigas.

Scala InfoChannel Network Drivers

$125–$250 per node, ***Amigo Business Computers***

• requirements: Ethernet hardware, Scala InfoChannel software.

• provides script/file-transfer control: from InfoChannel Creation/Master workstation to a display/slave station; Emodem for Ethernet, Xmodem for serial port/modem, Pmodem for parallel port.

Toaster-Net

$349 (five-system license), ***Interworks***

• requirements: NewTek Video Toasters, Ethernet card, ENLAN-DFS software, cables.

• provides remote control of Toasters, including rendering a sequence of LightWave scenes or selective frames, delegating rendering across a network, automated moving of complete scenes (objects, images, and so on) between systems, and monitoring status of render farm via a graphic display of the network.

Wavelink

$159.95, ***Axiom Software***

• requirements: two NewTek Video Toasters.

• supplied: ParNET software, ParNET cable.

• provides faster rendering of LightWave animations.

HARDWARE

A2065

$331, ***Commodore***

• requirements: Amiga 2000, 3000, or 4000; 10Base2 (ThinNet), 10Base5 (ThickNet).

• provides Ethernet connection for A2000, 3000, 4000.

A4066

Ameristar/Creative Equipment International

• requirements: Amiga 2000, 3000, or 4000, 10Base5, 10Base2 (ThinNet), 10BaseT (UTP).

• provides multiple interfaces to any of the three major connector types (10Base2, 10BaseT, 10Base) without convertors or transceivers. Scheduled for release in early '94.

Amigo PCMCIA Ethernet

$299, ***Amigo Business Computers***

• requirements: Amiga 600 or 1200;10Base2 (ThinNet), 10BaseT (UTP) cables/connectors.

• supplied: one either-or combination 10Base2/10BaseT connector.

• provides Ethernet connection for PCMCIA slot, activity LED(s), external power supply.

CSANET

$199, ***CSA***

• requirements: Amiga 2000, 3000, 4000, or CSA Twelve Gauge-equipped Amiga 1200.

• supplied: Amiga Envoy software from Interworks.

• provides Arcnet controller rated at 2.5 megabits per second.

• comments: CSANET should ship in early '94 on a Zorro slot board and later as a factory upgrade to CSA's Twelve Gauge (A1200) and 40/4 Magnum (A4000).

EB-920

$349, ***ASDG***

• requirements: Amiga 2000, 3000, or 4000; 10Base2 (ThinNet) cable, BNC connectors.

• supplied: one BNC connector.

• provides Ethernet connection, SANA-II compliance, EB920 device driver

• comments: provides only one type of interface. You may need to spread the sides of the CPU frame to install the board in an A3000. The BNC connector has a plastic threaded housing that won't fit through the external card slot on some machines.

I-Card

$299, ***Interworks***

• requirements: Amiga 600 or 1200; 10BaseT (UTP), 10Base2 (ThinNet) connectors.

• provides Ethernet connection for PCMCIA slot. □

—JD



used its own copy of Workbench 2.1, rather than loading it from the file server (which is provided for in the installation process).

At this point, I logged the Amiga onto the file server. A new drawer icon, representing the root directory allocated by the LAN administrator for the Amiga, appeared on the Workbench. Files saved from the Amiga appeared as two files on the server: one data and one .info (icon) file, somewhat similar to the way Macintosh files are stored. A Macintosh client who logged onto the file server was able to see and access the files the Amiga had stored. (MS-DOS clients would not see the .info file, and might truncate the filename because they can deal only with 12-character names.)

I checked the system/network status and tested a rudimentary "chat mode" (one-line message with no immediate-reply capability, as with the Amigo Ethernet's chat window). I examined supervisor capabilities as well as the LAN printing function.

Some Netware commands are not available in this version of ACS (as noted in the manual) and the supervisor capabilities are not yet at the Netware 3.11 level, but it appears that Oxxi will continue to enhance ACS. Once some other technical problems were resolved (not all related to software installation), file-server access worked like a charm. Neither the MS-DOS file server nor the Amiga had any qualms about working together.

I did not have an opportunity to see whether ACS would open the Ethernet card in "share mode" so that AmiTCP could be started up at the same time. This arrangement would allow the Amiga to work with the Netware file server and act as an IP host (accessing other IP hosts and/or the Internet). The Netware environment does not appear to provide for any external network connectivity.

The connection point I was given on the Novell LAN was not directly compatible with any Ethernet card. A GVC AUI-to-BNC Transceiver ($49 from Data Comm Warehouse) provided the neccessary hardware to join ASDG's card with the LAN.

5. Internet Via AmigaNOS

The fifth trial involved hooking up to the Internet via AmigaNOS to a telephone network, through a terminal server. In addition to AmigaNOS, you need a telecommunications package to make the dial-up connection to the SLIP's "front end" (or host). This is also true for AmiTCP using a SLIP connection. Once the SLIP setup was complete, the Amiga was defined and recognized as a legitimate Internet (IP) host. The modem had to be configured to remain "up" once the telecommunications program was terminated. This is required because AmigaNOS does not share the serial device, and it means that once a session ends, you must turn off the modem to break the connection to the SLIP host.

AmigaNOS (modified and maintained by John Heaton) has been around for quite a while, and, in addition to FTP and Telnet, it includes an SMTP server (which can send and receive RFC822-formatted e-mail), as well as some other server/client functions, such as Finger and TTYLink. Currently, it also has better diagnostic and statistics capabilities than AmiTCP.

One useful aspect of this scenario is the ability to communicate with individuals who subscribe to commercial services (such as CompuServe and Portal) that have Internet connections.

One interesting test I did with this configuration was to generate e-mail (using BM, B. Dale's "Messy-Dos" mail program) and send it to a Lotus Notes user via a cc:mail (SMTP-Link) gateway. In this case, the communications were not established via the target user's PC (IP host), since the e-mail recipient—a LAN PC—was not running any TCP/IP software. A gateway PC running the SMTP-Link program was the IP host that took delivery of the e-mail. Through the LAN, it then forwarded a modified copy of the e-mail to the Lotus Notes server, where the LAN PC user could read it. This is just one example of an SMTP gateway. There are others, and, apparently, more are being developed. (SMTP/RFC822 is the standard for e-mail on the Internet.)

In a variation on this theme, I connected an Amiga running AmigaNOSGW (a modifed version of AmigaNOS) to a SLIP "front end" via a standard phone line and telecommunications program.

Once the connection to the SLIP host was made and both ends were set up and running, the remote Amiga became a full-fledged IP host on the Internet. I executed the Amiga Gopher client program and an AmigaGuide window with action buttons popped up. Clicking on "Enter Gopherspace" opens another AmigaGuide window with a list of gopher sites. After making a selection, the Gopher client program connects with the indicated remote host as a Gopher client. If the selection represents a file, the client program will initiate an FTP call to the appropriate directory and will download the file to you automatically—without your having to issue commands or know the full directory path in advance.

Other commercial networking products were not yet available at the time of this writing. (Those for which we had detailed information are listed in the "Product Specs" box.) Interworks' I-Card, which should be shipping by the time you read this, looks to be similar to Amigo's PCMCIA Ethernet solution for A600s and A1200s. Envoy, the standard peer-to-peer networking software developed by Commodore's Amiga Networking Group, has became available ($59.95 for a two-user site) from IAM (Intangible Assets Manufacturing). Meanwhile, at press time Commodore was in the process of licensing both Envoy and AS225 R2, its TCP/IP product, to Interworks and Oxxi for distribution and further development.

CSA and Expert Services have also gotten into the networking act. CSA announced its Arcnet-based CSANET hardware, which promises ten times the performance of ParNET and AppleTalk networks at about half the cost of Ethernet solutions. The hardware will ship with Envoy software provided by Interworks.

Expert Services has announced its A3065 Ethernet card, which includes two parallel ports with network drivers and ships with Envoy software. In addition, the company will offer its Liana peer-to-peer networking solution—also with two parallel ports, SANA-II-compatible driver, and Envoy software. Both products are scheduled for February release.

We'll explore these products in future issues and keep you updated on how you can realize net gains through the ever-expandinging realm of Amiga networking. ■

Jim Dutton is Senior Systems Programmer for Network Communications at Southern Illinois University.



Hidden AmigaDOS Gems

There are some precious untapped resources in the latest releases of AmigaDOS—as we'll see in this three-part series on mining the secrets of the Amiga's new operating system.

Part 1: Shell Secrets

DIGGING DEEP BELOW the Amiga's surface uncovers a motherlode of power: one of the most awesome command-line interfaces this side of Unix. Yet many users rarely leave the safety and comfort of the old familiar Workbench or their favorite directory utility. If you haven't checked out the Amiga's Shell interface, you're missing a constellation of valuable utilities that can make using and maintaining your system much easier.

In this three-part series we'll take a look at unleashing some of that hidden potential. Our first installment opens with a survey of some AmigaDOS commands you may not be taking full advantage of yet. Next month we'll learn to use various AmigaDOS script commands to automate complicated tasks; we'll wrap up the following month with AmigaDOS techniques that will boost your system's printing prowess.

Note that many of the features described in this series require AmigaDOS version 2.04 or later. If you plan to spend much time using the Shell—or the Workbench, for that matter—upgrade your system to at least AmigaDOS 2. In the later versions of the operating system you'll find new commands, old commands with potent new options, an easier-to-use Shell window, compatibility with the latest commercial software, and fewer appearances of that scary flashing red box at the top of your screen.

Tapping the Wealth

If you've used the Shell at all, you're probably familiar with its basic commands for disk navigation and file maintenance, such as Dir, CD, Copy, Delete, and Rename. Or perhaps you've used the Assign command to tell a program where to find its data files. But many Amiga users never get past these fundamentals, just because it seems simpler to use the Workbench or a directory utility to maintain files. If you delve a little deeper into AmigaDOS's capabilities, though, you'll find a range of convenient features that make GUI (graphical user interface) file operations seem complicated and cumbersome by comparison.

One command in particular, available since version 1.3, can make your life in the Shell much easier: Alias. It lets you create shortcut versions of other commands specifying various options, or shorten lengthy commands. For instance, I hate typing ChangeTaskPri, so by adding the command

```
ALIAS CTP CHANGETASKPRI
```

to my S:User-Startup file, I can just type

```
CTP 2
```

to change the task priority to 2; anything you type after the Aliased command is appended to the command line.

What if the changeable parameter is in the middle of your command? Simply insert a set of brackets into your alias to mark the spot where the parameter should fall in the command line. For instance, the command

```
ALIAS FORM1 FORMAT DRIVE DF1: NAME [ ] NOICONS FFS
   DIRCACHE
```

lets you type

```
FORM1 BILLCAT
```

to format a disk in the external drive, name it BILLCAT, and use the operating system's NoIcons, FFS, and DirCache options. (Note that DirCache works only in AmigaDOS 3.0 and later.) The Alias command can save you a lot of typing when you need to issue the same command often—*and* you don't have to memorize all those command parameters.

Forging the Link

One command that's similar to Alias is handy in a few special cases: whenever two or more programs want to use a similar file, but for one reason or another each wants the file in its own directory. MakeLink creates a ►

By Denny Atkin

ILLUSTRATED BY FRED LYNCH

fake file on disk—actually a pointer to another file on the same disk with a different name.

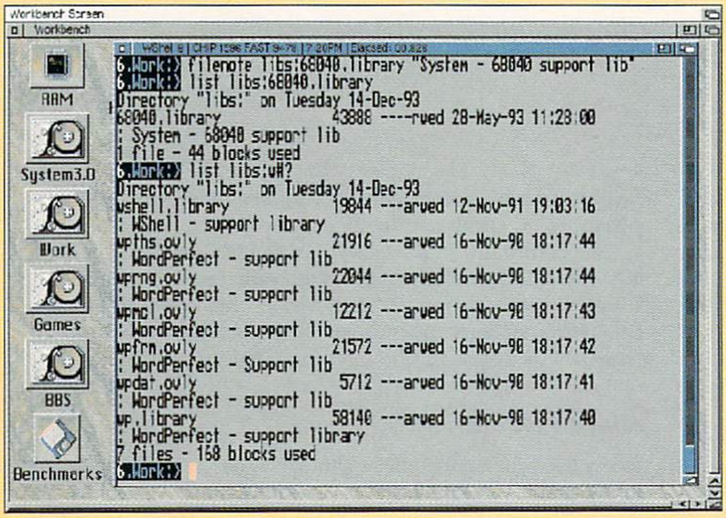
Suppose two programs have user dictionaries in the same format—plain ASCII—containing properly spelled words not found in their standard dictionaries. Instead of adding the same words to both dictionaries time and time again, why not have them share the same file? Type

MAKELINK FROM DH1:WORD/UDICT TO DH1:WRITE/MYDICT

and any program that tries to read or write data from the UDICT file will access the MYDICT file instead.

Polishing the Product

Now for a real AmigaDOS gem. You have almost certainly encountered Assign at one time or another. This command creates logical assignments—essentially



You can employ FILENOTE to mark the uses of the various libraries in the system LIBS: directory.

similar to aliases, but referring to directories instead of commands.

Your system makes some assignments automatically when you boot up; for instance, C: refers to your command directory, DEVS: to the directory containing device drivers, and FONTS: to the directory containing your font files. Commercial programs often require you to issue Assign statements telling where the program and its data files are related; Professional Page, for example, creates a CGFonts: assignment that tells where its Compugraphic outline fonts are located. To create this assignment you use a command such as

ASSIGN CGFonts: WORK:FONTS/OUTLINE/COMPUGRAPHIC

If you want to change to that directory simply type

CD CGFonts:

instead of the much longer full path.

Assignments are useful not only for system files and commercial programs, but for your own data as well. For instance, my User-Startup contains the statement

ASSIGN FWDOCS: WORK:DOCUMENTS/WORDPROC/

FINAL_WRITER/TEXT

which makes selecting my document directory much easier. I can use FWDOCS: to refer to the directory not only in the Shell, but also in program file requesters and directory utilities.

Most people stop there, with this basic use of the Assign command. But Assign offers many other options—features that make it one of the most useful AmigaDOS commands in your arsenal, especially if your data spans multiple hard-drive partitions or floppy disks.

In AmigaDOS 2 and later you can specify that a single assignment refer to more than one directory. For example, suppose you would like to add a number of public-domain bitmapped fonts and commercial outline fonts to your system. You don't want to mix them up with the fonts that came with your version of AmigaDOS, though—you may prefer to delete them later, and you also don't need the hassle of dealing with a 200-font list when you're just doing casual word processing. How can you keep it all straight? Assign's ADD parameter lets you tack more directories onto an assignment. For example, if you type

ASSIGN FONTS: WORK:MOREFONTS ADD

any program that searches FONTS: for files will check SYS:FONTS (the default FONTS: directory when you boot up) first, and then WORK:MOREFONTS.

You can add any number of directories to a single assignment. This command is especially useful when you want to spread related files across multiple disk partitions: If you run out of space in one directory, create a new one on another drive and add it to the assignment.

Suppose you want to keep some files on a floppy or a removable hard disk to save space on your hard drive, but the application that uses those files requires an assignment. Assign's DEFER option lets you create a "late-binding" assignment, which does not go into effect until you actually access the assigned device name. This eliminates the need to insert the proper disks during the boot sequence.

For example, you might add a statement that says

ASSIGN PICS: DF0:JPEGS DEFER

to your S:User-Startup file. The first time you try to CD to the PICS: directory or access it from a file requester, AmigaDOS will look for a directory called JPEGS on a disk in df0: and make the assignment to that directory. Note that the assignment is disk-specific, bound to that disk's volume name.

What if you want an assignment to refer not to a specific disk volume, but to the drive itself? Assign's PATH option does just that. For instance, if you issue the command

ASSIGN FONTS: DF2:Fonts PATH

any program searching FONTS: will look for the directory named Fonts on the disk in drive df2:. Without the PATH parameter, the assignment would refer to the specific disk in df2:; if you swapped floppies, your system would ask for the original disk every time a program referred to FONTS:. But with the PATH option, it simply looks for the directory name Fonts on any disk that happens to be in drive df2: at the time. Note that you can't assign multiple directories with the PATH option, however.

And for more-advanced users, AmigaDOS offers the EXISTS and DISMOUNT parameters. EXISTS comes in handy when you're checking scripts for directories. If the directory to which you refer does not exist, Assign sets the AmigaDOS variable WARN to True. For example, to check for a directory called PICS:, you would include the following sequence in your script:

```
ASSIGN PICS: EXISTS
IF WARN
  ECHO "THERE'S NO PICS DIRECTORY!"
  ENDIF
```

DISMOUNT removes a peripheral's name from the Amiga's device list. It's there mostly for programmers, but it's a boon if you don't want your kids accessing your floppy drive or you want to substitute one disk for another. Just type

```
ASSIGN DF0: DISMOUNT
```

to effectively remove access to drive df0: until you reboot.

A more useful variation of this command comes in handy when you're using a recoverable RAM disk to run old games, such as F/A-18 Interceptor, with program-code references to df0:. This sequence of commands will make your Amiga think the RAD: recoverable RAM disk is actually df0:

```
ASSIGN DF0: DISMOUNT
ASSIGN DF0: RAD: PATH
```

Be careful with this feature, though, and do not remove device names indiscriminately. Many Amiga programs assume automatically that devices such as df0: and RAM: are available to the system, and may fail if they're not.

Documenting Worth

Have you noticed that some of your system's directories are filled with strange files and you have no idea where they came from? AmigaDOS provides its own equivalent of sticky-notes—a command that lets you attach comments up to 79 characters long to your files. You might use FileNote to jot down a quick remark about the contents of a particular word-processing or spreadsheet file, for example, or to mark a file's origin.

When I install a new program that copies new files to system directories such as LIBS:, FONTS:, or DEVS:, I always watch the installation carefully and then go back and use FileNote to identify those files. For instance, you might want to mark all the files installed by WordPerfect in your LIBS: directory so that you'll know which ones you can delete if you remove WordPerfect from your hard drive. Since all the files start with the characters WP, you can use a wildcard to mark them all at once:

```
FILENOTE WP#? "These files were installed by WordPerfect 4.1"
```

Filenotes do not show up when you issue the Dir command, so you'll need to use List instead. List shows filenotes automatically, as well as the date a file was created and its protection bits. The following Alias creates a command called LF, which will list just filenames and their filenotes:

```
ALIAS LF LIST [ ] LFORMAT= "%N  %C"
```

With this alias, you could type LF DH0:DEVS, for example, to get a list of all the files in dh0:DEVS and their filenotes.

Note that when you use the Copy command to duplicate a file, it does not duplicate filenotes automatically. Use Copy's COM (copy comments) or CLONE (copy all file characteristics) options to make sure your notes go along with the files. In fact, my S:User Startup file contains the following Alias to ensure that all files I copy keep their comments:

```
ALIAS COPY COPY [ ] CLONE
```

That Alias appends the CLONE parameter automatically to all Copy commands I type.

"If you delve a little deeper into AmigaDOS's capabilities, you'll find a range of convenient features that make GUI file operations seem complicated..."

Wrapping Up the Package

I'll close out this first installment with a quick tip that can unleash new power from a program you probably already use: Commodore's ED editor. Under AmigaDOS 2.04 and later, Commodore has enhanced ED dramatically, adding many new commands and even ARexx support. But someone at Commodore must have decided that the new command-packed menus would be intimidating to new users, so AmigaDOS's designers created a startup file that would hide most of the additional menu commands. To access them, type ED RAM:TEMP first to load ED, and take a look at the menus. Exit the program, and either delete or rename the file called S:ED-STARTUP. Now load ED again. Presto! All sorts of new menus and commands are now available. If you're not a programmer, you'll find that ED has all the power you need for basic text editing. ■

*Denny Atkin is an editor and freelance writer. He's the author of **Denny Atkin's Best Amiga Tips and Secrets**, which contains handy tips on everything from using AmigaDOS 3.0 to expanding your Amiga system. Contact him c/o **AmigaWorld**, Editorial Dept., 80 Elm St., Peterborough, NH 03458 or at DennyAmiga@aol.com.*

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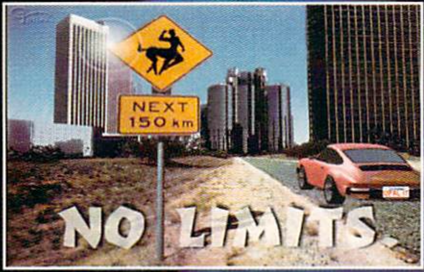
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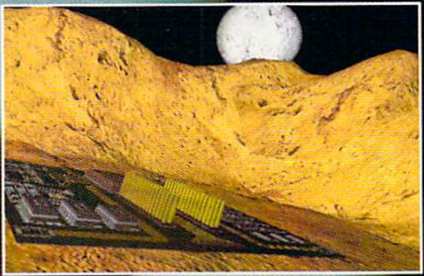
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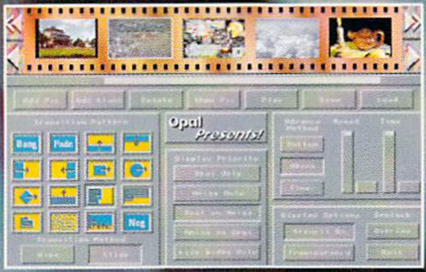
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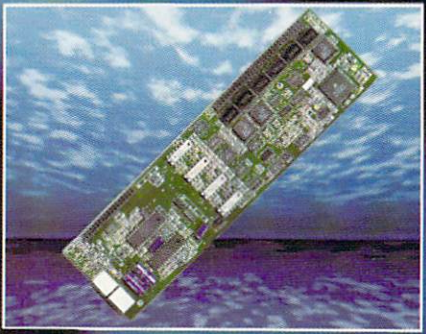
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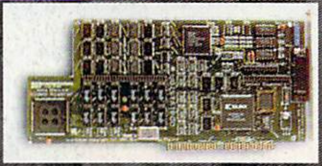
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OpalAnimMATE
plays animations at rates of up to 60 frames per second. It works in 8, 12, 15, 18 and 24-bit modes and features selectable screen sizes from 32 x 20 to 768 x 286 pixels.



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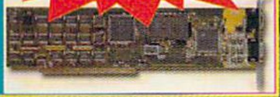
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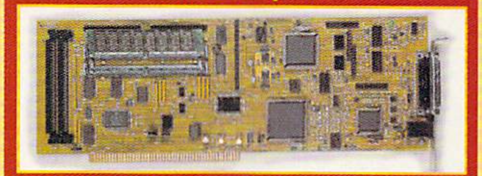
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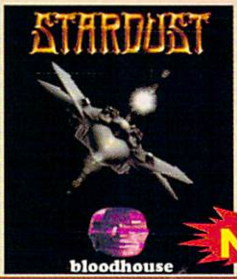
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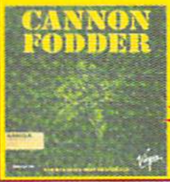
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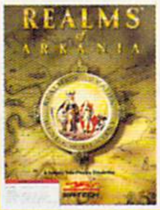


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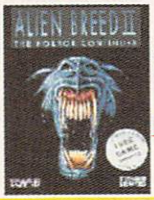
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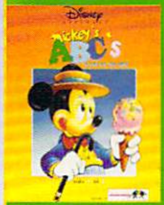
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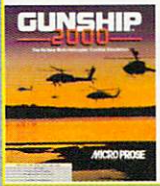
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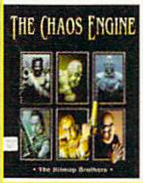
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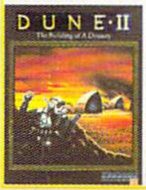
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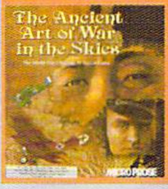
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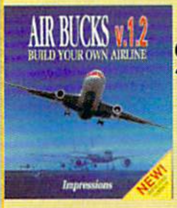
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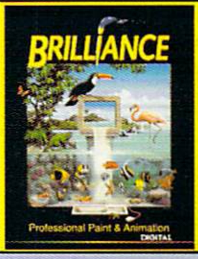
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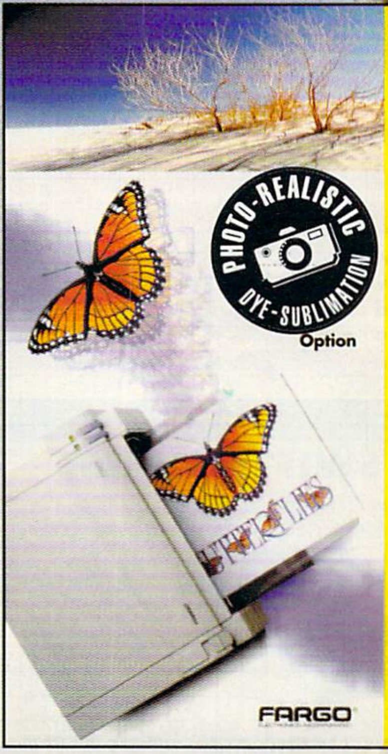
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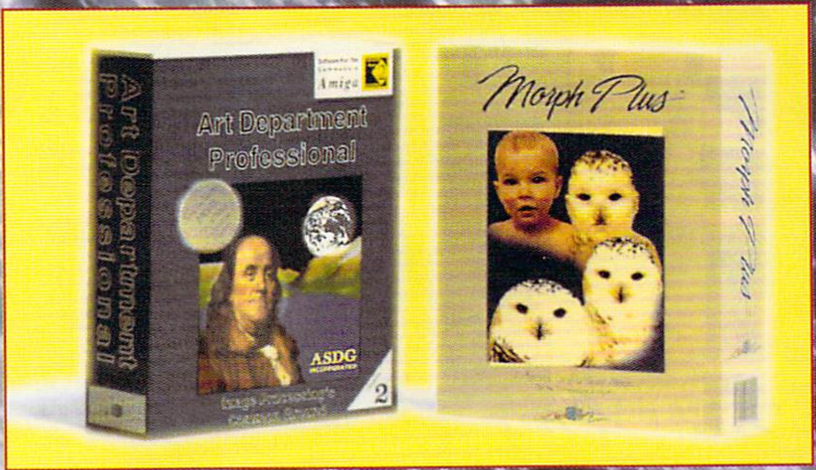
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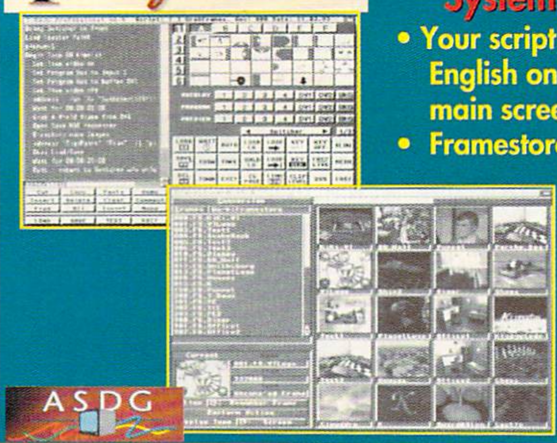
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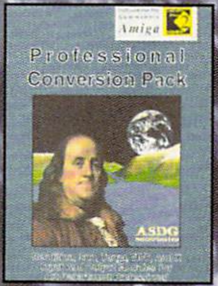
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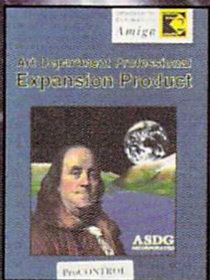


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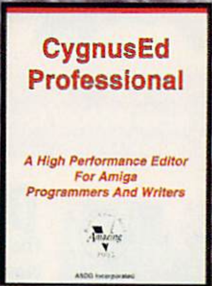


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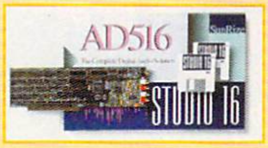
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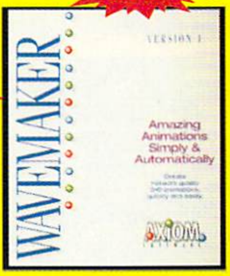
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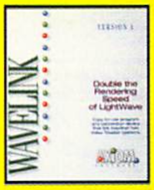
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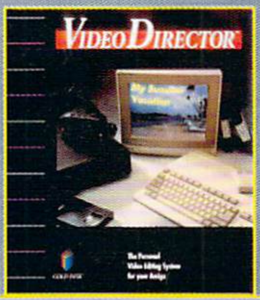
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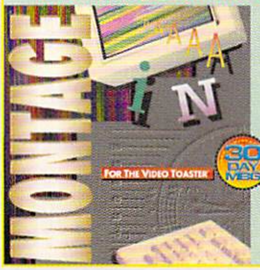


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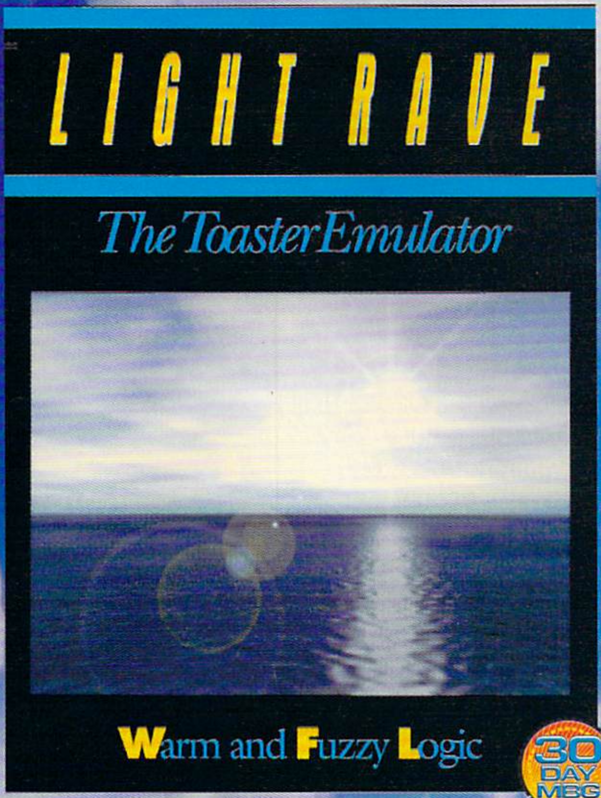


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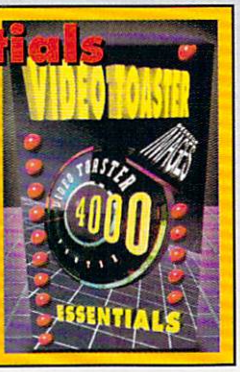
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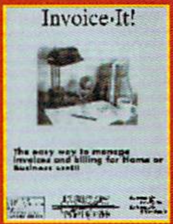


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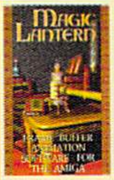


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Magic Lantern



24-bit animation software supports AGA, Opalvision Picasso, Retina

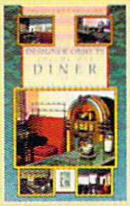
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From p. 19.
simulating movement on a still-frame display. I found it possible to display on my A3000T an eight-bitplane, hi-res 736x482 screen with 256 colors cycling that in theory would normally require an AGA machine.

As impressive as are the colors in the image that accompanies this review, you haven't witnessed the true beauty of MV-generated graphics until you've seen them color cycled.



Fancy graphics courtesy of MathVISION.

Unfortunately, you can see these images cycling in all their splendor only from within MV. As no standard exists for the implementation of color cycling, the beautiful MV modes aren't always translated properly. To see color cycling without having to set new ranges in the viewing program (DPaint, for example), you must save the picture in MV with color cycling active. The Tab key controls color cycling.

MV's editing function works much like a word processor, in that it allows formulas to be cut and pasted. Pressing the right Amiga key and then the X key cuts the line you are on, while Control key and the Y key insert the cut line either into a blank line or over an existing line of formula. Render in lo-res at smaller screen sizes to get an immediate look at what you have created. Once you like what you see, you can render in AGA or 24-bit mode at full screen size to behold the stunning results.

Screen Updates

Tooltype settings for customizing MV ensure that your plots will have icons when saved and establish which hooks you want loaded when the program starts. These hooks provide for calling on various additional features within MV, but their implementation can be confusing. Sometimes when you attempt to plot a formula, you'll get an error message "unknown function." This is because the required hook is not loaded. There is a Hooks menu, but you must instead select the Global Functions menu to see which hooks are actually available. A foolproof method is to incorporate into the Tooltype setting all the hooks you intend to use.

An artifact from the old version is the method of establishing screen resolutions. In MV 2.4, you must select resolution from the Screen menu, and basic options of resolutions and interlace settings are a click away. These values, however, are nonoverscan; to get overscan, you must still type in the screen's physical dimensions.

All my gripes aside, this is a powerful, useful program. If you want unusual graphics for your videos and are willing to spend some time experimenting on your own, MathVISION 2.4 is a bargain. On the other hand, if you are seeking to obtain quick proficiency and results, you might want to opt for the Video Gold.

—*Otto von Ruggins*

Magic Lantern

Terra Nova Development, **$95**

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Real-time playback software for 24-bit animations.

I submit for your inspection little Jimmy Simmchip, not a traveler from another time nor a visitor from another place, but today's Demolition Man, a computer-graphics guru, if you will. All of his odd-job stipends have gone towards his Amiga, making it a safe haven for a 24-bit graphics board, an accelerator, and a single-frame controller.

The 24-bit animation he's nurtured for the last month is finally done. Ready for public display, Jimmy presses the Play button on his VCR and unveils the animation on a television. Why a television? Because his computer, like so many Amigas, is not up to the task of displaying 24-bit animations.

Breaking Old Habits

Does the above scenario sound familiar? Displaying 24-bit animations in real time seems an elusive dream. Because of the number of various 24-bit display boards, the ANIM format is not necessarily optimized to each one.

The Magic Lantern (ML) from Terra Nova is a program that partially addresses this problem. ML plays 24-bit animations from memory or disk in real time at rates of up to 30 fps (frames per second). It is a framebuffer animation program that optimizes your animation according to the type of display you are using.

Currently, ML supports four display boards: the Retina 24-bit board, Picasso II, OpalVision, and a board called GDA (Graphics Display Adaptor). With ML, you



ML, for those really tough 24-bit anims.

can run animations in native Amiga screen modes, including AGA and ECS. ML calculates, on a frame-by-frame basis, which compression options are best, thereby creating animations that are optimized for size and speed, depending on the output device and resolution being used.

Before you use ML, you must first have available the individual IFF frames that make up your animation. Most rendering packages automatically generate individual frames, but there are also numerous commercial and public-domain programs that can accomplish this. ML's clean, gadget-driven interface presents you with all the options needed to construct an animation file. The program converts IFF files into what Terra Nova calls DIFF files. A spilt screen shows the IFF source files on the left side, and the target DIFF frames that constitute the animation on the right. You can place individual frames in any order and move them up or down the target list. You can also cut, copy, or duplicate any target frame.

Listen Up

Sound is often an important ingredient in animations, but trying to sync it with graphics can be frustrating. ML lets you place mono IFF sound files anywhere within the target list, and ML automatically compiles them into the playback file.

ML automatically chooses the best Delta orientation and compression scheme, according to your selected

Continued on p. 64.

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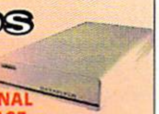
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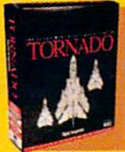
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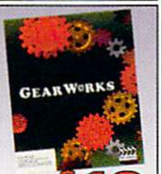
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From p. 60.
output device. You can also manually select the type of compression to use, thus affecting both the size and playback speed of the animation. Moreover, the animation can be double buffered, which makes it run smoother, although it's then increased in size and a bit slowed down in performance. Compiled animations can also be broken down and saved into individual DIFF frames.

The quality is amazing. Generating my own animation sequences on a 68030-equipped Amiga, I was impressed by the fluid movement and smooth playback. It looked as good, if not better, than most true-color Targa animations produced by high-end PCs.

With the Retina, you choose your own screen mode, or have ML do it for you. Likewise, Retina users can choose to generate animations in 8-, 16-, or 24-bit mode. Speed should not be an issue for fast (68030/68040) machines. Stock Amigas, on the other hand, may have to trade off 24-bit mode for 16-bit mode to get acceptable results.

Even so, the Retina's 16-bit mode looks as though it's ready for broadcast. Keep in mind, however, that the final screen resolution, machine speed, and amount of information that changes from frame to frame will yield significantly different results for full-motion animation playback.

Reservations

A few irritations associated with the program served as a reality check for my enthusiasm. While you can play large animations from hard disk, they then tend to appear a little jerky. Naturally, the read speed of your drive and your Amiga's performance also affects the playback speed. In addition, ML does not clean itself up very well. After generating a 24-bit animation file, I tried to go back and regenerate it after resequencing several frames. I received an "out of memory" error when I tried to compile the new animation, even though I had not added any frames. I rebooted and then experienced no problem.

The files generated by ML can be extremely large, depending on the compression scheme used and whether sound files are included. I was frustrated when I had to disable a couple of utilities to bring my total to almost 6MB before a 3.3MB animation would play.

I was also surprised that ML would not automatically separate IFF frames from source animations. Of a lesser surprise, ML will not convert graphics files from one format to another. Lastly, if you run into problems, not only is the documentation of little help, but there is no listed customer-support number to call.

News to Follow

ML remains a worthwhile investment. As of this writing, I know of no other software that can do what Magic Lantern does. Terra Nova plans to upgrade Magic Lantern continually to address some of the problems noted in this review and to support new display cards as they become available. Despite its quirks, Magic Lantern is a true innovation in the animation arena.

—John Ryan

AsimCDFS 2.0

***Asimware Innovations*, $79**

All Amigas and CDTV.
2.0/3.0 compatible.
Hard-drive installable.
Not copy protected.
Accelerator compatible.
***Minimum system:* CD-ROM drive or CDTV.**
***Recommended system:* High-speed CD-ROM drive, hard drive.**

CDx

***Xetec*, $50**

All Amigas.
1.3/2.0/3.0 compatible.
Hard-drive installable.
Not copy protected.
Accelerator compatible.
***Minimum system:* CD-ROM drive.**
***Recommended system:* High-speed CD-ROM drive, hard drive.**

CD-ROM control and player software.

The entire computer market is flooded with cheap, high-speed, high-quality CD-ROM drives. These models are now so affordable that anyone who wants access to a massive 600MB of read-only data can have it for less money than a 3.5-inch disk drive.

Two Amiga stalwarts of the market, Asimware and Xetec, know what's needed to connect industry-standard SCSI CD-ROM drives to your Amiga. Both companies have built a much-needed bridge between your Amiga and an incredible reservoir of general-purpose items like fonts, clip art, textures, 3-D objects, Kodak Photo-CDs, audio CDs, and even CD-based Amiga shareware.

Driving Miss SCSI

AsimCDFS and CDx are two superb programs with more similarities than differences. They both support a large list of SCSI CD-ROM drives and SCSI controllers, and they make most of their hard work totally transparent to the user. Among the more exotic drives supported are double-speed drives and the multi-disk Pioneer DRM-600. Xetec has the larger list of obscure SCSI controllers. To put them to the test, I tried them with the new, double-speed Apple CD300, which is a Sony drive in an Apple case. Both packages worked flawlessly.

Installation was a breeze. The install programs automatically found my CD-ROM drive and accurately determined the model number and location in the SCSI chain. After a few clicks in the install program and one reboot later, there was a CD-ROM drive icon, alive and well, on my Workbench. Both drivers took advantage of the double-speed feature and rapidly read all the CD-ROM discs I threw at them.

In addition to reading and running software on Amiga CD-ROM discs, AsimCDFS and CDx can both read data from discs in High-Sierra, HFS, and ISO-9600 formats. Insert an industry-standard PC or Mac CD-ROM, and you can reliably read the data using a stock Amiga. CD-ROM users can read text files directly and, with graphic-conversion software (not included with either package) or a display card, view graphic files.

Emulator-equipped Amigas can run PC and Mac programs from CD-ROMs. This cross-platform access opens up countless new horizons. Mind-boggling quantities of information on PC and Mac CD-ROMs are now directly available to Amiga users. Xetec lists generic CD-ROMs with their CDx package that include NASA photos, fonts, and clip art.

CDTV and PhotoCD Compatibility

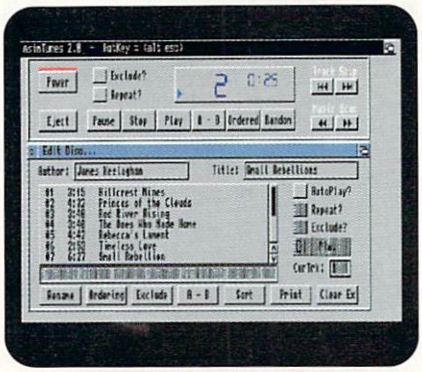
Both programs allow you to read and run CDTV discs on your Amiga. Xetec's CDx provides extra support that tweaks specific CDTV titles into running properly, and a remapped keyboard duplicates most of the buttons on the CDTV controller. Keep in mind that some CDTV discs run only under Kickstart 1.3 and therefore cannot run properly on newer Amigas. Ask before you buy the CDTV disk, or get an upgrade from the manufacturer.

Both drivers handle all CDTV titles that run under AmigaDOS 2.0, but only the Xetec driver operates on Amigas running 1.3. Although AsimCDFS runs only under 2.0 and higher, Asimware offers a version that runs under 1.3. It costs $7, or you can download it from the Asimware BBS.

PhotoCD has yet to set the graphics world on fire, but you'll find that both packages support it. With PhotoCD, you

can have photographs digitized onto a CD-ROM disc for later viewing on a computer or television. Both Asimware and Xetec support single- and multi-session PhotoCD. Single session allows writing only once. Multisession allows you to bring your disc back to the photo developer multiple times to have new photos added.

The CDx driver has a primitive solution: a Shell-based translation program that creates a 24-bit IFF file from a PhotoCD file. You'll need a 24-bit graphics board or an image-conversion program like Art Department Pro to view them. This conversion process is simpler with



AsimCDFS controls all your CD-ROMs.



Xetec's CDx interface screen.

AsimCDFS. The Asimware converter has a point-and-click interface and displays pictorial thumbnails of the PhotoCD art.

Singin' CDs

AsimCDFS and CDx both allow CD-ROM drives to play audio CDs. Controller programs operate like tape drives, in that they emulate commands to start, stop, fast forward, and rewind. Needless to say, these features are not necessary with CD-ROM discs. Asimware wins this round, too, with an option-ladened controller and a database for cataloging songs and albums. Xetec has one special feature here: You can play a CD just by clicking on its Workbench icon.

Both programs have simple default configurations, but they still allow a large degree of user customization of fine details. They both support ARexx, though CDx provides a good deal more support to developers by offering extensive source code. Both come with well-written manuals. The CDx manual has more technical information, but the AsimCDFS manual is both clearer and better organized. Neither Xetec nor Asimware can be faulted for their technical support, which is excellent.

Both come with Fred Fish CD-ROMs that contain vast piles of freely distributable programs. They have caught up with Fish and More Vol. 3, and both now carry the Fish library through the 900s. The only downside to both packages is the constant polling of the CD-ROM drive to check for an eject. This causes the hard-drive light to flash constantly. But that's a minor gripe in view of having access to the entire Fred Fish collection, which is of almost incomprehensible proportions.

Both AsimCDFS and CDx are outstanding performers. They do exactly what they claim, providing fast access to virtually any SCSI CD-ROM drive on the market. I can recommend either package. They are slick, professional, and all their surprises are pleasant ones.

The computer industry is awash in a sea of low-cost, high-performance CD-ROM drives. Just because they were not specifically designed with the Amiga in mind doesn't mean they're off-limits. With clever third-party packages like AsimCDFS and CDx, we can truly have it all: a great machine with unlimited data resource potential to match.

—Daniel Greenberg

WaveLink

***Axiom Software,* $159.95**

All Amigas.
2.0/3.0 compatible.
Hard-drive installable.
Registration-disk copy protection.
Accelerator compatible.
Minimum system: **Two Video Toaster 2.0/3.0-equipped Amigas, AmigaDOS 2.0 or higher.**
Recommended system: **Same as minimum.**
Installation: **Easy.**

ParNET-based, two-Amiga network for the Video Toaster.

Users of NewTek's LightWave can never get enough processing speed. The reason is simple: The faster your animations are rendered, the more work you'll get done. While adding another Toaster system can double the rendering power, it's complicated and often frustrating trying to move scene files and rendered images between two Amigas. Axiom's new WaveLink makes this process a great deal easier by allowing for two Amigas to render the same animation, thus effectively reducing production times.

Wired, Registered, and Running

WaveLink consists of a ParNET cable and custom software. To install it, the ParNET cable must be connected to the parallel port of each Amiga. Naturally, make sure that both Amigas are powered down before connecting the cable. After connecting, install the software on each machine.

If you have an old version of the ParNET software installed, use Remove_Net from the original ParNET to remove the assorted files from the entire system. Once in place, WaveLink designates one Amiga as the Server, and the other as the Client. The Server acts as the controlling machine. The Toaster should be up and running on both machines before starting the WaveLink software.

After performing the initial installation and running of the software, the program prompts for the Registration disk. Be forewarned that WaveLink can be run only after registering the software. Axiom displays some creativity in producing on-disk registration that replaces the traditional mail-in cards. This process works by writing data on the Registration disk, which you mail in a disk mailer that Axiom has thoughtfully provided and pre-stamped.

Makes the Scene

The WaveLink control screen appears only on the Server computer, where the Scene file *must* reside to be selected for rendering. If the scene to be rendered is located on the Client machine, an accompanying program aptly called the Scene Mover uses the ParNET system to move the scene to the Server.

Once the scene file is properly situated, several options demand attention. First, you must decide if the rendered files are to be saved as RGB images or Framestores, and you need to enter a destination directory where they'll be saved. WaveLink allows you to save files in individual drives and directories, or in a shared location. Since WaveLink uses ParNET as a network, you can save the files on either machine.

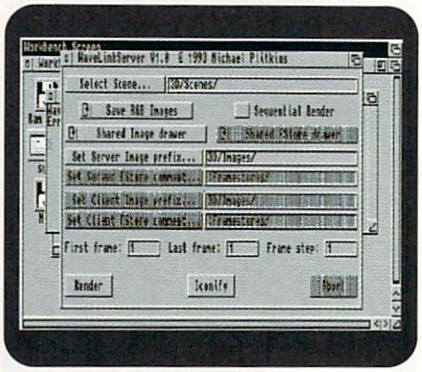
After setting up the paths for image saves, you can begin rendering. You ►

select the first frame, the last frame, and the frame step either from the WaveLink screen or from LightWave. To start the process, click on the Render button. Each machine begins rendering frames and saving them according to the user choices previously selected. If at any time you need to interrupt the rendering process, click on the abort button. (LightWave 2.0 users must stop the process from within LightWave.)

Normally, LightWave saves rendered files in the order of creation, which means that the files will probably not be saved in a logical order, especially as no two machines operate at precisely the same speed. WaveLink looks for an extension at the end of each scene frame as a reference (001, 002, and so on). The program makes allowances for processor-speed differences between the two Amigas by allowing the faster to save its files to a temporary directory. The files are moved to the main storage location once the preceding file is saved. This is an essential feature, because animation-building programs and devices like the Personal Animation Recorder (Digital Processing Systems) must have files sent to them in the proper sequence.

Behavior Modification

The manual for WaveLink is on the short side, but all functions are thoroughly covered. All of the ARexx commands used with WaveLink are included, which is a nice touch, as ARexx controls all of the parameters of WaveLink. Axiom is to be commended for including this important feature.



WaveLink carefully controls LightWave's rendering process on two Toaster-equipped Amigas.

If there is a downside to WaveLink, it is the registration process. The software itself is not copy protected, but according to disk-based documentation, any reinstallation attempt produces prompts urging you to call Axiom and request a new registration disk. Also, you can run the software only fifteen times (you'll have to re-install the program the sixteenth time) while in receipt of a new registration disk.

Axiom claims this is ample time to continue using the program before the new registration disk arrives. They also state that this ensures that more users will register their software and improves the company's technical-support and upgrade efforts.

Axiom is continually improving every aspect of the registration process. Chances are, by the time you read this review and purchase WaveLink, a more refined manner of registering the software will be in place.

Overall, WaveLink works fine. Rendering times are greatly reduced, and it makes the use of multiple systems much easier. The support of ARexx is a great feature, and the inclusion of ParNET is icing on the cake. WaveLink should be considered by anyone using multiple Toaster systems.

—Dave Thomas ■

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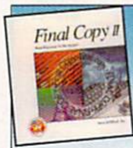
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ACCENT ON GRAPHICS

61

A continuing series of tips, techniques, and tricks for creating more imaginative Amiga graphics.

By Joel Hagen

Portrait Lighting for 3-D Artists

TO OUR EYES, space and dimension are defined by form, color, and light. Of all these factors, light is perhaps the most important. Light and shadow delineate shapes, reveal edges as lines, and create a compositional structure for the eye. As light changes, the compositional structure changes. This allows the brain to organize visual information about the same scene in new ways.

Understanding how to control this mental interaction of perception and attention is at the root of the visual arts. Any good photographer has a keen understanding of the role light plays in defining form and space—but the portrait photographer probably has developed a methodology for controlling lighting that is as detailed and clear as anything you might ever find on the subject. I would think that computer artists working with 3-D software will find such techniques to be invaluable.

Portrait-Lighting Lexicon

If you are new to lighting in 3-D rendering software, try the system of exploration outlined here, then branch out on your own. The idea is to break the craft of lighting down to simple basics in order to understand fundamentals of describing space with light. The accompanying illustration was done in Caligari's (Caligari Corporation) "Quick Render" preview mode—and I will refer to Caligari's tools throughout the column—but any good 3-D rendering software offers similar lighting options.

Load or create an object for your experiments. While lighting a simple sphere can be instructive, it may be more useful to light something with more complex contours. A lathed object like a goblet would be good. For your experiments, limit yourself to two lights. In the jargon of portrait photography, the main light is the "key" light and the secondary light is the "fill." The key light is positioned closest to the object and has the strongest effect on its appearance. The key creates the basic hard-edged composition of light and dark, and delineates what the artist wishes to reveal about the form of the object. The fill light introduces some illumination into the shadow areas to soften the contrast of the composition and bring out details. For your experiments, make both lights "local" or "spot" and make the fill light about half the intensity of the key.

For your first test try the "High Front" lighting arrangement shown in the upper half of the illustration. Position the key light above, centered and slightly in front of the object. Keep the fill light centered in front of the object, but pull it back a little and drop it slightly below the midpoint. Depending on your software, you may need to specify its intensity as half that of the key. Some programs such as Aladdin 4D (Adspec) offer combinations of real and artificial light behavior as intensity changes relative to distance.

Positioning lights in Caligari's Scene interface is very intuitive. Simply rotate your point of view around the object—imagining yourself as a light. Then switch to the Light tool and press the "From Eye" button. The light is automatically positioned at that point in space, aimed at the object. Switch back to Scene and position your eye for the second light; then go to the Light tool, add a light, and press From Eye again. Set the intensity of the fill light lower than the key. Return to Scene and this time imagine yourself as the camera. Position your eye for the snapshot and try a Quick Render. The faceted preview image should be something like the examples in the illustration, adequate for exploring the concepts.

An experienced photographer will

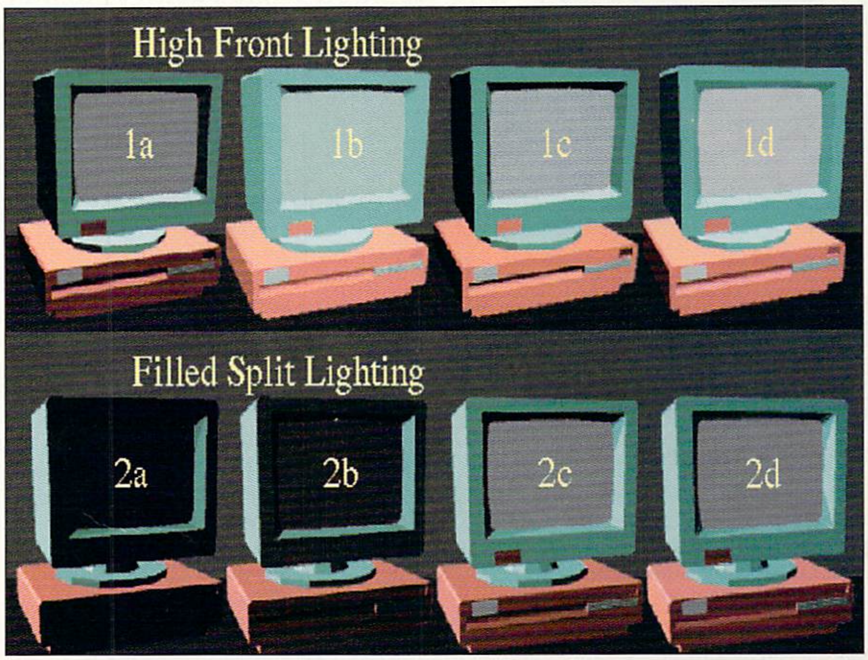
Borrowing some techniques from portrait photography, Amiga 3-D artists can learn how to better control lighting in their compositions.

typically begin a lighting session with the fill light turned off. You can do this by setting the fill intensity to zero. This allows you to refine the position of the key light to reveal the form in light and shadow. Your experiments will quickly show that surprising variations are possible with very slight shifts in the position of the key. Figure 1a shows illumination from a spot key light only with no fill. Figure 1b shows a diffuse local key with no fill. Figure 1c presents a spot key with a spot fill, while 1d is a spot key with diffuse fill.

And Now for a Few Variations

Contrast the "High Front" arrangement with the "Split" lighting composition in the lower half of the illustration. In this one, the key is above the left rear corner of the object and the fill is below the left front corner. Split lighting refers to the dramatic separation of an object into two halves divided by the light/shadow line. Figure 2a shows the key light only. Notice how the bulky shape of the object—rather than details of the surface near us—dominates our attention. Figure 2b shows the same key with a dim spot for fill, while 2c raises the intensity of the fill a little. Figure 2d changes the fill to a diffuse light source.

In addition to these two arrangements, there are several other basic portrait-lighting setups—and each is as easy to experiment with as the first two. For instance, with "Narrow" lighting (also called "Rembrandt" lighting) the key light is placed above and slightly behind the subject, almost pointing at the camera. The fill is positioned near the camera, slightly to either side. The subject is in three-quarter view from the camera. By contrast, in "Broad" lighting, you would put the key high and in front of



Here we see how two different basic portrait-lighting arrangements are used to illuminate the same object in Caligari. Each example illustrates four variations of the same key and fill lights.

the subject at a three-quarter angle for full illumination. Place the fill high in front at the other quarter.

For dramatic effect, try "Ghoul" lighting, which essentially is exaggerated low front lighting. The key is centered in front—very low and angled up—while fill is dim and diffuse from above to reduce the contrast. Finally, side and overhead "Bounce" lighting round out the collection of basic studio portrait techniques and can be simulated with diffuse key and fill lights.

From these basic experiments, you can expand to multiple objects in a scene with multiple light sources. Looking at 2a and 2b may remind you that sometimes indirect lighting can be most dramatic.

You may want to experiment with a couple of small tensor lamps and a table-top still life to hone your lighting skills before jumping into the software. On the other hand, 3-D rendering software often can be an effective way to work out lighting for complex real-world applications such as theatrical staging and set design. ■

Joel Hagen's credits include work in art, astronomy, science fiction, and software development. Write to him at 10512 Sawyer, Oakdale, CA 95361. Please include a stamped, self-addressed envelope for a reply.

VIDEO



SUITE

Down to Business

No matter how small your video business, you need to know some basics to achieve success.

By Geoffrey Williams

YOU'RE A CREATIVE type, not a business person, right? Still, if you're serious about making money as a video professional, there are a few business principles you should follow.

Setting up Shop

Assuming that you possess some equipment and talent, the first thing you'll need is a DBA and a business license. The DBA, which stands for Doing Business As, is an official piece of paper stating you have the right to run your business under a unique name of your choice. The name should convey some idea of what you do, and you should by all means avoid names that make your business sound like a video-rental store. You should also, of course, avoid names used by someone else. Believe it or not, most county offices where you register your DBA are not computerized and so cannot quickly tell you if your name is already in use. You have to check this out yourself. The county office should have a book listing all the DBAs in your state, so make sure that you look through it first. Another good idea is to check the phone books in your area code to make sure your name is not similar to any other in your vicinity.

To run even a home-based business requires a city business license. Each city has its own restrictions about what you can do in a home-based business, but typically you are not permitted to attract a lot of traffic or put up a big sign.

Depending upon where you live, you may need a resale license, even if you only produce videos for clients. Many states hold that you are selling the videotape (which you can buy wholesale without paying any tax if you have a resale license) and that the tape stock itself requires payment of a state sales tax, even if you bought it retail. Check the requirements with the nearest state franchise tax office.

When it comes to taxes, the paperwork for a partnership is a major hassle. The easiest way to do business is to get your DBA as a sole proprietor. There are many good books available on how to deal with the tax angles, and you should refer to them—or a tax advisor—so that you understand record-keeping requirements, know which expenses are currently deductible, and so on.

Your home office is a potential problem. The IRS is now very strict about your using a room for absolutely nothing other than business-related work if you are to take it as a tax deduction. You can't store personal items in it, or use it as a family room, or have it double as a sewing room. A home-office deduction increases your chances of being audited, so a lot of people no longer bother to take it.

Advertising and Promotion

One common method of advertising is to take out an ad in the Yellow Pages. If you are trying to attract local business, and it is not completely obvious from your business name what you do, this can be a good investment, but it is not cheap. You pay a fee every month for a year. In most cases, you get a single-line listing when you have your business phone hooked up; this will be enough for most video businesses.

Unless you do most of your work for the general public, however, the Yellow Pages may not do you much good. Rather, you should figure out which businesses might need your services, call them to find out who the decision makers are, and send them promotional materials. This is the least fun part of the job, but if you want to work, the people who can use your services have to know about you. Being good at what you do just isn't enough, so you must be active in going after work. Some of the most successful businesses have been those with only moderate talent but great promotional abilities.

What to Charge

This is often the most difficult issue for people starting out, although there are simple ways to help determine what you should charge. First of all, find out the rates of other local businesses that do similar work. Call them up and ask for a rate card. This will do for basic things like video editing, but it is much more difficult to decide what to charge for creative services. The *Graphic Artists Guild Handbook: Pricing and Ethical Guidelines* ($22.95, Graphic Artists Guild, ISBN 0-932102-07-7) contains lots of useful information on pricing, including standard fees for audiovisual and multimedia services. It should be on the shelf of everyone working in this industry.

Of course, it is important that you get paid, but don't forget that you also want to make a profit. As far as business expenses go, you have an investment in equipment, and you need to provide for continued investment, as well as paying the phone and office-supply bills, taxes, and so on. In fixing your charges, therefore, you must not ►

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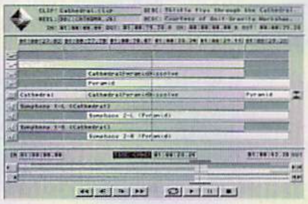
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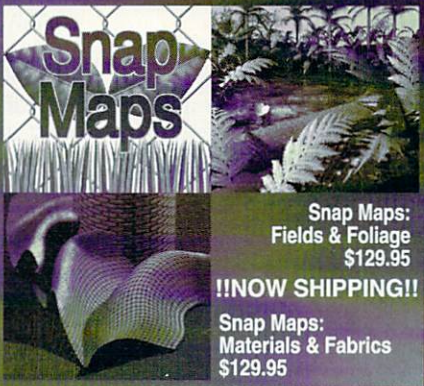
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only consider the rates of your competition, but determine what income you need to keep the business going and earn a profit, as well. Be careful, for while charging less than everyone else may bring you more clients, it can also put you out of business if you're not making enough to keep it all going.

You also need to be somewhat hardheaded. When a client comes to you and says, "We don't have much money for this project, so we can't pay your full rates this time, but we'll be doing some big projects soon, and if we like your work, you'll make lots of money on them," just show him the door. This is the oldest scam in the book: trying to get you to work for next to nothing. It's a losing situation for you. People do not pay next to nothing for a first project and then graciously decide to pay you a great deal more for the next one. They want to pay at the same rate the next time, and if they can't get it, they'll look for another sucker. I have known of many artists and videographers who have fallen for this and lost their shirts.

Estimating Project Costs

It is easy to bill for two hours of cuts-only video editing or for a logo design, but when you're doing a big project with a lot of creative work, the costing out is more difficult. Your client wants to know how much the total will be, not the cost of each hour of each service.

First, break down the project into all its steps and decide what each element will cost. If you must hire other people, know what their fees are. Set up a spreadsheet with all of this information categorized. Have a space for scanning, for example. If you charge $4 per scan, and the project requires 40 scans, just type 40 into the quantity space, and the spreadsheet will tell you the billable total for scans is $160. Create other spaces for the different types of manipulation the scans might require that you would bill at different hourly rates.

For example, one section might be for simple background removal or color correction, and another for the much more difficult repair of damaged images. Because the time needed for such operations is unpredictable, bill these on an hourly basis. In order to tell what to charge, you must look at the scans and be able to make a decent estimate of how long each one should take. This ability to estimate is a very important skill. Poor estimation can wind up costing you either money (if you charge too little) or the project (if you estimate too much).

The spreadsheet should also provide for two additional items as percentages of the total cost. First of all, you should add a percentage for profit, and then, to cover cases where your estimates are off or unforseen problems arise, I'd add a 10% overage fee. If the actual total for the job falls below the estimate, your client will probably be delighted to pay less than expected.

Contracts

Multimedia and video producers frequently lose money because of poorly written contracts. Simple provisions can ensure that you not only get paid, but that you are also compensated for cost overruns that can eat away all of the profit. A contract must clearly spell out exactly what you are going to do for the client and how much he or she is going to pay. It does not have to be in fancy legalese. Plain, simple English that is clear and not open to interpretation is best.

Several provisions are critical. First and foremost is that clients must put in writing any changes they want made along the way, with the understanding that they will be billed extra for these changes. Any changes, additions, or corrections of client mistakes outside of the initial agreement will cost them extra, and this must be clearly spelled out in the contract.

You must also get client approval at each step. With 3-D animation, for example, do a wireframe or simple movement test, along with a description in storyboard form, of coloring and other aspects that might not show on the test animation, and get it approved before rendering. For character animation, first get character sketches approved, then do a simple motion test for approval, and finally do the complete animation. In this way, clients have no argument if they decide to make changes after it is finished. This approval process should also be spelled out in the contract.

I have never done a project where the client did not want changes, even when every step was approved. Often, such last-minute changes come from a boss who hasn't worked directly with you. It's not your fault, so make them pay. Of course, anything that is your fault you should cheerfully correct at no additional charge.

Of all the provisions in the contract, none is more important than this: The client does not get the finished project until you get final payment. Until I learned this, I lost a lot of money because clients failed to pay, even with a contract. One of them went out of business leaving a trail of debtors; another was a master at avoiding being served with a lawsuit; one big company took six months to pay. Once they have the project, there are people who know that the odds are in their favor. Even if you sue them, they have to pay only what they owe you plus minor court costs. They are often willing to gamble it won't be worth your time; and if you do persevere, they lose little. Even after they have lost a judgement, getting them to actually pay can be an enormous, frustrating undertaking.

My procedure now is to get a third of my estimate up front, another third upon approval of all designs and initial graphics (typically about half-way through the project), and the final third when the project is completed and ready for delivery. If they do not pay you in full, they don't get it, and you already have two-thirds of the money. Also, all video samples that you send out to them for approval should have the words "Demonstration Video Only; Not for Distribution" keyed over the bottom, because it can happen that they'll use what you send for approval and not pay you.

The Business Plan

If you want to make money, you must *plan* to make money, and the accepted practice for doing this is the business plan. Few enterprises can survive without careful planning; this is one of the most important things you can do to make sure your business survives.

Do cost estimates of your regular expenses, as well as planned expenditures for new equipment. While five-year plans may be typical, the video business moves so fast that a one-year plan will be more useful. Once you know expenses, set goals as to how much money you need to take in and strategies for earning it. By comparing your current status with your business plan, you'll see how on target you are, and whether you need to make major changes in your procedures.

A good, basic small-business book will give you more specifics on most of these topics; a small-business class at the local community college or adult-education center is also a good investment. Talent and creativity are not enough. If you want to make money in video, you must be businesslike about it. ■

*Geoffrey Williams is director of Creative Business Presentations and a frequent contributor to computer-video publications. Write to him c/o **AmigaWorld** Editorial, 80 Elm St., Peterborough, NH 03458.*

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The Game Preserve

By Peter Olafson, AW Games Editor

Jurassic Park

B+
CD32 planned.
A1200 ✓ *
Not hard-drive installable.
Copy-protection.

LAST SUMMER'S MONSTER movie hit has a potential new feeding ground: Amiga gamers' wallets. ***Ocean's*** **Jurassic Park** (about $35 on the street) is the giant UK publisher's first solid film license in...well, um, actually, I can't remember a previous solid Ocean film license. And I guess that's the point: Jurassic Park could easily have been the umpteenth recycling of the Untouchables/Total Recall/Terminator 2/Lethal Weapon game engine—can't you just see hordes of bright-eyed dinosaurs tromping sideways?—and it isn't. Not by a long shot.

This is a stylish arcade-adventure—AGA-only (for the time being)—that combines elements of games like The Chaos Engine and Wolfenstein 3-D. Are you sure we're swimming in the same Ocean? This is much more like something you'd expect from a bright light like Team 17 or Renegade.

The game is the movie in rough sketch. Starting in a pit beside your fallen jeep, you wander through this dinosaur preserve—seen from an angled-down point-of-view—in search of puzzle-solving tools, the inevitable ammo and first-aid caches and, in sum, a way out. Which you will not find easily. This enormous jungle-within-fences is full of deadends, false trails, simple tasks whose solutions will take you hither and yon, and ever larger and more resilient dinosaurs—most of them a bit grumpy and peckish.

That's just the stick. Eventually, you'll be drawn indoors for the carrot, and in these connecting levels JP finds its best and truest state: It morphs into an atmospheric, smooth-scrolling 3-D raptor hunt—the sort that's all the rage on the IBM but still a relative stranger to the Amiga. These climactic sequences are worth the long slogs through the game's outdoor portions. Let's just say I was biting one hand and holding onto my chair with the other. And they were both sweaty.

The game looks consistently great—from the moving silhouettes of grazing brontosauruses that grace the password screen to the thick tapestry of palm trees on the first level, to the grassy-topped stone-rimmed buttes on the second, and to the shadowed twilight of the interior. The dinosaurs—even the tiny compys, the seagulls of JP—have been done up in great style, to the accompaniment of thunderous effects when interacting with the bigger ones. (The music's a constant presence, but it's used principally to set mood, and stays sensibly in the background.)

Moreover, these aren't simple arcade-game pictures. (There's very little that's predictable about JP.) Your character can walk behind trees and thread his way through them—no getting stopped by the border of a treetop here—and the dinosaurs (in particular the spitters) will sometimes let loose while so concealed. By the same token, JP doesn't have a point system—the idea is to make progress and stay alive, not kill off sort-of-extinct reptiles—and the mission descriptions have been cleverly inserted into the game (rather than in the manual) via motion-sensor terminals that allow you to read messages, scan paddock layouts and populations, and open doors.



One of the challenging raptor-hunt sequences in Jurassic Park.

And yet JP the Game occasionally has the same problem as JP the Movie: an enjoyable technical spectacle without compelling emotional weight. It's always interesting—you want to keep exploring, if only to reach the 3-D bits—but it's not always exciting enough, or even busy enough, to make you feel any sort of harrowing stake in the outcome. If they'd just given us a bit more to do—there's a lot of ill-used space, and many of the existing puzzles are treasure hunts—we might have had a classic on our hands.

Beyond that, JP would have a smoother flow were it hard-disk installable—not so much for the swaps, which aren't at all excessive (whole levels load into memory at once), as for the accesses that follow. You can't get into the "head" of a game as easily when you have to wait for it—a game should always be a step ahead of you on the path—and it would have saved wear and tear on the four copy-protected disks. (I guess we can't expect Ocean to change everything overnight.)

A bigger potential problem can't really be laid at Ocean UK's door: US gamers will not be able to play Jurassic Park without an assist from another program. This version is PAL-specific, written for the European market, and will not work ►

A—Wow! Exquisite. A must for your games library.
B—Great fun. Plenty of entertainment value here.
C—Meets expectations. Good, solid, performer.
D—Disappointing. Lots of room for improvement.
F—A real stinker. Don't waste your time.
*** You may encounter some problems under this operating system and/or require a PAL/NTSC adapter.**

Circle 93 on Reader Service card.

on NTSC A1200s even when booted in the A1200's built-in PAL mode. You'll have to use a PALboot program—I used Degrader 1.3, with both 50 MHz system settings enabled—to get it up and running.

However, Jurassic Park is worth that effort. This is not the soul-wracking personal expedition it might have been, but neither is it the quick-hit, assembly-line product we had every reason to expect. Wild: Ocean actually making a strong movie license. Will wonders never cease?

Jet Strike

A
1.3 ✓
2.0 ✓
3.0 ✓
Hard-drive installable.
Off-disk copy-protection.

JET STRIKE (RASPUTIN, distributed by ***SeaScape Software***, about $40) would seem to take off from a sadly neglected Broderbund game, Wings of Fury. It wasn't a flight simulator, but it wasn't just an arcade game either. Damage inflicted in one attempt lingered into the next, and the tiny folks on the Pacific islands you were deforesting responded specifically to your tactics.

Aaron Fothergill—responsible for a number of excellent public-domain games—has taken that concept and kicked it up into the present day. He's thrown in a whole packet of different aircraft, a ton of missions (including a huge campaign), a great selection of scenery to crash into—I mean, dodge—and better jet-engine sounds than some flight sims. (Hook up that stereo, eh?)

Oh, and absolutely the most riotous gasoline-fed fireballs you've ever seen when a plane goes down.

You're at war with an outfit called SPUDD, whose forces occupy an island on the left side of the screen, with its own airfield, anti-aircraft implacements, and nicely-placed high-rise buildings. You'll run recon, take out ground units, collect agents, tangle with rival fighters and ships, sometimes at night and sometimes in fog. Control is pure joystick, and not hard to pick up, with tugs right and left used for throttle and for letting your major weapons loose when the fire button is held down.

OK, some may snipe that Jet Strike's graphics are a little less than state-of-the-art. The remaining portions of damaged buildings have a clipped-off look, and there's the slightest flicker when your plane is idle on the ground.

But so what? You're not going to be standing still longer than it takes to refuel. This is utterly addictive stuff and another intelligent, strategic variation on the shoot-'em-up. Put it this way: When an updated pre-release version arrived, work in this house ended for the day. Buy this game, and cook the SPUDDs. ►

AGA GAMES

Pinball Fantasies AGA

A
CD32 ✓ *
A1200 ✓
Other Amigas ✓
Hard-drive installable.
Off-disk copy-protection.

The Amiga gave this brilliant pinball game (*21st Century*) to the IBM, and now the IBM's given it back with interest: 256 colors—128 of them reportedly used for the ball alone. I can't say anything much that hasn't been said before—playing these four superb tables remains a visceral experience—except that this time they don't hit you up for an extra $10 for the hard-disk installable version. That's built-in for the A1200.

However, hold off on the CD32 version until an NTSC take turns up (possibly as part of the US bundle). It's great—basically the 1200 version with even better sound—but at press time was available only in PAL, which won't run correctly on most NTSC television sets even with the CD32 booted in that European configuration. The picture just rolls crazily, and that should be the ball's job.

Civilization AGA

C+
CD32 –
A1200 ✓
Other Amigas ✓
Hard-drive installable.
Off-disk copy-protection.

The core of MicroProse's empire-building game is as great as ever, of course, but the AGA implementation (Software Demon Ltd., distributed by *Kompart UK*, about $45) is something of a disappointment.

The biggest single complaint about the original game was dodgy graphics, and that's the main improvement you'll notice in the 256-color rendition: little waves on the shore, greater clarity and depth to the colors, and smoother transitions between them in the many cut-scene shots. It's a subtly prettier game.

But I still wouldn't call it pretty. The map screen, where you spend most of your time, is scarcely any different from the blocky original. The game's slow even on a speedy machine. (The screen fades don't help, but turning off the animations may.) And it came with just the old IBM manual, without any hype on what was changed or even Amiga-specific instructions—a particular pain when my copy initially worked only from floppy. (I eventually traced the problem to corruption of larger files owing to the maximum transfer rate on my A1200's hard drive.)

No wonder MPS parceled this project to an outside publisher. Looks as though this Civilization has taken a step sideways.

Ishar 2

A
CD32 –
A1200 ✓
Other Amigas ✓
Hard-drive installable.
Off-disk copy-protection.

Ishar 2: Messengers of Doom (Silmarils, distributed by *Daze Marketing*, about $35) is a dazzling RPG regardless of the width of its palette—see the December Game Preserve for a full review—but this A1200 version lights up the screen in a way the original didn't. It's as though a curator had whipped in with a Dust Buster and Pledge and given the original artwork a scrub: The game now just beams out at you. You're certain to be beaming back.

Donk

B+
CD32 planned.
A1200 ✓
Other Amigas ✓
Not hard-drive installable.
Copy-protection.

This would be worth a look if only because it's a bit different: The AGA version comes packed on the same three disks as the standard Amiga version. (It's always nice to be able to count on still playing a game after The Upgrade.)

By the way, that's going to be a long look: Donk *(Supervision,* about $35) is a sparkling collect-the-jewels platformer from the designers responsible for respectable PD puzzle games like Puggles, Revolution, and Rome.

Lots of cool effects and sly surprises lie in waiting for your samurai duck, and while you'll occasionally catch yourself thinking that this is platform-game stock-in-trade stuff, something will always come along to make you smile and forget what you were thinking. The two-player mode is a killer, the quack sounds will have you laughing, and the AGA version throws in nifty detailed backdrops for the rear layer of the parallax scrolling. A keeper.

Ambermoon

B+/A-	1.3 ✓ * 2.0 ✓ * 3.0 ✓ * Hard-drive installable. Off-disk copy-protection.

AMBERMOON (THALION USA) should prove a boon to anyone who despairs of cutting-edge Amiga games turning up in the US before their IBM counterparts. This second in a series of role-playing games from Germany's Thalion label—the sequel to Amberstar, which we'll look at next issue—takes on both Ultima VI and Legends of Valour and equals them in important respects.

Unfortunately, I can't really comment on the story. An English-language version should be out here by the time you read this, but the version I previewed was in German. However, it's an approving comment on Ambermoon's point-and-click icon interface that I nevertheless got into the game quickly, moving, fighting, asking questions (via a windowed menu of keywords), inventory-managing, and installing the nine disks to the hard drive without a lick of English instruction.

Like Amberstar, Ambermoon is a hybrid. In the great outdoors and inside buildings, it adopts a detailed angled-down perspective much in the style of Ultima VI. And if you thought U6 looked hot, and it did at the time, well, you ain't seen Ambermoon yet. We're treated to glowing images of polished floors, burning fires, little pots giving up littler circles of steam, residents going about pre-bedtime calisthenics (or so it looked to me). The wider world—the game's set on a dozen or so islands—is no less beautiful or detailed. Ambermoon has a great sunset.

Fortunately, Ambermoon's designers sacrificed U6's cumbersome fixation with making everything take-able, which encouraged players trained in grab-whatever-isn't-nailed-down games to accumulate huge burdensome inventories of semi-useless domestic objects. Not to say there isn't anything to steal, but take-able objects here are typically hidden within furniture or chests, and what you take is what you might conceivably need at some point.

Elsewhere, as in the expansive cellar of your dying grandfather's house (where the game begins) or in the nearby bandit-plagued stockade city of Sppannenberg, Ambermoon goes into a free-scrolling 3-D mode much like that used in LOV. It's smooth and fast—at least on '030-based machines—and while this engine lacks Legend's look-in-the-windows charm and second-story views, it does generate a sharp-looking automap with items of interest highlighted for you. And that, in turn, offers a rapid-transit mode that allows you to zap immediately to any previously-visited location on that same town map.

So why then, with two effective styles already under its belt, does Ambermoon opt for still another, less effective mode for combat? The more you divide up a game's format, the more you put the game's overall consistency at risk. (That's one reason games like Ultima Underworld are such a success: They set a single tone and hang onto it for dear life.)

Besides, this one's an antique: the old square-by-square board game, abetted by a generic pseudo-3-D view. It's turn-based, rather than real-time, so everybody has to be given an order for each turn. The animated enemies move rather slowly. And even under "Schneller Kampfmodus" (faster battle mode, which I found indistinguishable from the normal mode) simple combats can take ages to conclude. It took me better than 30 minutes for my character (name of Thalion) to bring down a party of bandits in Spannenberg, and finally I just gave up in disgust and allowed the survivor to retreat out of range.

My only other complaint of substance is that entryways in the 3-D portions of the game don't really open. You simply walk through doors or (when using ladders) sink through floors, as if you were in a cheat mode...or already a ghost.

Hey, that may eventually be, pal, but don't rush me. I've only just arrived, and plan to stay for a while. I may not know most of the words, and I may fumble with the pronunications, but I like Ambermoon's accent.

SHORT TAKES

The Patrician

A	1.3 ✓ 2.0 ✓ 3.0 ✓ Hard-drive installable. Off-disk copy-protection.

By and large, I'm not crazy about commodity-trading games. Too often that's about all they are, and you can only buy low and sell high without reward or good evidence of progress so many times and for so long before you sell low the game you bought high. There has to be something more to keep you going.

The Patrician has that something more. This trading game, set in medieval Germany, has an involving feel more like that of an historical RPG—with a sense of meaning, of continuity, of development, of time passing.

Naturally, there's the standard buying and selling of goods and the building and dispatching of ships. But add to that the matter of your marriage, public opinion, your campaign for mayor (there's an honest way and a sleazy way), and the new tasks that come with success (not to mention your relationship with the church). You'll even need to keep an eye on the bulletin boards.

Now add up to three other human players, and you'll have a sense of where this is going. The Patrician is amazingly detailed, especially given that the requirements of the player are so pleasantly broad and that the interface—mostly point-and-click—is so simple. Consider your wedding: You don't just have to line up a bride, but set a date, a place and organize the celebration in detail—all with consequent impact on your reputation. And as always in these games, reputation (and money) is everything.

Unfortunately, while the game's in English, the HD installation routine is in German, and it neglected to copy over three important files on Disk 1. (Y'know, the one that starts the game?) And the map used for copy protection is printed on the equivalent of fish & chips paper.

But I'm getting a little obsessive about details. Must be the Patrician influence! This is one trading game I wouldn't sell high or low. Within its genre, it's virtually priceless.

(Note: The version I reviewed was an English-language import from Germany's Ascon label. By the time you read this, *Readysoft* should have released a domestic version at $59.95.)

Prime Mover

D+	1.3 ✓ 2.0 ✓ 3.0 ✓ Not hard-drive installable. Copy-protection.

Here's a motorcycle racing game (*Psygnosis*, $49.99) in the Super Hang-On mode which seems designed to take away some of the sting lingering from Red Zone—you can actually *play* this one—but winds up going too far in the opposite direction. Prime Mover's fast and slick, with a handsome face, but it has little else to recommend it—the collisions aren't ►

To locate vendors of the games reviewed, see the "Manufacturers'/Distributors' Addresses" list on p. 90.

half realistic—and EA's Road Rash easily blows it off the highway. Perhaps the in-the-works AGA version will have more to it. As is, Prime Mover's a two-wheeled F17 Challenge.

ALIEN 3

B– | 1.3 ✓ 2.0 ✓ 3.0 ✓ | **Not hard-drive installable. Copy-protection.**

The plot—hairless Ripley rescues a slew of identical cocooned bald men wearing fatigues—has almost zero to do with the movie. The faded early-Konami graphics scream "IBM port" (it isn't), and the crude animations don't say much at all.

But gameplay is the long suit of this long-awaited arcade-adventure (*Virgin UK,* about $35), and elements like the balance of arcade action versus adventure setting, the ingenious use of air ducts, the ungodly speed of Old Drippy Jaws, and how far from the player they appear (not far!) all factor out to repeated visits.

THOMAS THE TANK ENGINE II

B | 1.3 ✓ 2.0 ✓ 3.0 ✓ | **Not hard-drive installable. Copy-protection.**

Not half as odd as it sounds, this *Alternative* cheapie (about $15) is a thinking train's arcade game. Tom's a locomotive who's pitted against his locomotive pals in races over a series of split-screen sideways-scrolling courses broken by switches, signals, deadends, track problems, pit stops at the water tower, nonracing engines, and the odd bonus game. It's designed for the kiddies, and I confess to having a thing for train games, but the playability's considerable and the scenery's charming as well. Alternative's onto something here, and you can't beat the price. (The original game, while more puzzle-oriented, wasn't exactly a slouch either.)

ALFRED CHICKEN

B– | 1.3 ✓ 2.0 ✓ 3.0 ✓ | **Not hard-drive installable. Copy-protection.**

The colonel probably couldn't make more than a five-piece meal of this sweet and silly platformer from *Mindscape UK* (about $35) featuring a tiny plucker with a big red comb doing the usual Dance of the Levels. Al's sculpted and shiny in the right places, cute without ever being treacly, tough enough to be diverting, and, while offering little that hasn't been done before, at least there's no big stink over *this* platformer.

BLASTAR

C– | 1.3 ✓ 2.0 ✓ 3.0 ✓ | **Not hard-drive installable. Copy-protection.**

Core Design returns to action after a long post-Chuck Rock II hiatus with Blastar (distributed by *EID,* $49.95)—a multi-directional shoot-'em-up that's closer to Amnios than to Battlestorm. It's lovely to look at it, and throughout achieves almost demo-like graphic effects. (Dig the undulation of the metallic surface on Level 2.) However, the gameplay's dire—fly around and shoot things—and the excitement level is tame. They have done better. ■

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FD74: Arcade Series - RingWar is an "Outer Limits" clone with vectorized graphics. MotherLode is a "Lode Runner" clone with 50 levels! In BlitzTanks, they're coming at you from all directions!! Call in air strikes and use your heavy artillery to survive!
FD75: Arcade Series - Descender is a clone of the classic arcade game "Tempest"; complete with vectorized graphics. Tanx is the classic battle of trajectories and inertia between two tanks—incredibly well done! Search is a maze game unlike any other—included is a level editor too. (Tanx requires 1 meg chip memory=Fat Agnus)
FD77: Arcade Series - Galaga'92 is a clone of the arcade game with several gameplay enhancements--with smooooth, sharp graphics, it's better than the original! Pharaohs Curse is a clone of the original C64 classic. Diplomacy is a beautifully computerized version of the Avalon Hill board game--conquer or be conquered!

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FD84: Games! Deluxe PacMan is better than the original-- 20+ mazes, special "power-ups" with *outstanding* graphics. ThinkAmania is the classic game of concentration--with *beautifully* drawn HiRes images.

WORKBENCH DISKS

WB4:Telecommunication - This disk contains several excellent pd communication programs: Access 1.42, Comm 1.34 & Handshake 2.12a. See also WB102 & WB115.
WB5: Fonts #1- 35 bitmap fonts. Also included are five PageStream fonts,and ShowFont - a font display program.
WB6: Fonts #2 - ShowFont allows you to quickly and painlessly view all 256 characters in a typical font. Includes large AmigaDos system fonts (many up to 59pts).
WB7: Clip Art - This disk is loaded with black and white clip art. Art includes, trees, websites, tools, US and State maps, and more.
WB9: Icons - Truly a multitude of various types and kinds. Also includes IconMiester, IconLab, and others great utilities to help generate icons.
WB12: Disk Utilities - This great disk is loaded with wonderful utilities for everything including making disk labels, disk cataloging, disk optimizing, disk and file recovery archive and organizing, and all sorts of file manipulation. A must have!
WB13AB: Printer Drivers and Generator - over 70 different drivers (including HP LaserJet 3 & 4!), also includes a printer-driver generator. Two disk set counts as two.
WB15: Business - This disk contains a spreadsheet, a database, a project/time management program and financial analysis (stocks).
WB18: Word/Text Processors - This disk contains the best editors. Includes,TextPlus (v2.2e) a full featured word processor, Dme(v1.35) a great programmers editor with strong macro features,TexED(v2.8) an enhanced Emacs type editor, and a spell checker.
WB22: Fonts #3 - Several more great fonts. These, like the other font disks work great with Dpaint and WYSIWYG word processors.
WB23: Graphics and Plotting - Plot, a 3-D mathematical function plotter. Can plot any user defined function, BezSurf2 - produce awesome pictures of objects one could turn on a lathe. Can also map IFF image files onto any surface that it can draw. Now compatible with most 3D packages, and VScreen - makes a virtual screen anywhere.
WB25:Educational - On this disk are two programs that can generate maps of differing types, World Data Base uses the CIA's data base to generate detailed maps of any entered user global coordinates. Also Paradox a great demonstration of Albert Einstein General Theory of Relativity.
WB27: Nagel - 26 Patrick Nagel pictures of beautiful women.
WB33:Circuit Board Design - several terrific routines for the electronic enthusiast, Including PCBtool - a circuit board design tool, LogicLab - circuit logic tester, and Mcad (1.26) a well done new release of this PD CAD program, now comes with predrawn common circuit components for insertion into schematics.
WB35: 3D Graphics - This disk contains 3Fonts - Full vector font set for use with 3d programs, FontMaker - make 3d fonts from any system font, Make3DShape - create 3d shapes from any image, DumptoIFF - create 3d animations preserves pallet, World3d - a demo of a front end for use with DKBRender.
WB36: Graphics - On this disk are several programs to create stunning graphical images including, MPath - creates swirling galaxy images, Roses - produce an unlimited number of variations of images that a symmetrically similar to a rose, SimGen - display those spectacular images as part of your workbench, and RayShade - a very good raytracing program, create your own beautiful 3d graphic models with this one!
WB37: Educational - Educational games and puzzles that cover math, geography, spelling, and books. Ages 6 - 15
WB38: Plotting and Graphics - Plotxy is a powerful full featured plotting package. Used by many colleges and universities. Highly recommended. Plans - a incredibly well done Computer Aided Drafting program, very full featured. Tesselator - a program that helps generates fantastic looking, recursive M.C. Escher type pictures.
WB41: Music - MED an incredibly well done, full featured music editor. Create your own stunning music directly on your the Amiga. Similar to SoundTracker but better. Very powerful easy to use program. Version 3.20--compatible with WB2+.
WB43: Business - This disk contains AnalytiCalc - probably the most powerful spreadsheet program on the Amiga. A full featured spreadsheet with many features expected in a commercial package. Req. 1.2 MB

SPECIAL PRODUCT • NEW RELEASE!!

QT3: THE A64 PACKAGE *VERSION 3* - A very complete Commodore 64 emulator. Supports any CPU and is fully compatible with WB1.3 & 2.0 and now 3.0! This version includes a special adaptor that will allow you to connect your 64's 1541 disk drive to your parallel port of your Amiga for total emulation. All-new transfer software! Special price $59.95 -with hardware.

WB46: Clip Art - HighRes clip art with the following motifs - embellishments (borders, dodads ....), people, & transportation.
WB47: Clip Art - Hires clip art. Motifs - hair, drafting, summer, animals and macfood.
WB48: Clip Art - Hires clip art. Motifs - Holidays, music, medical, and misc.
WB50: Animation - Seven of the best euro-style animations or "Demos", including - scientific 451, subway, sunride, thrstdemo, tnight, waves, and wow.
WB53: Graphics - Raytracing programs generate absolutely stunning realistic looking planes, rockets, buildings..., and surreal images. C-Light is the most powerful EASY-TO-USE of it's kind we have seen to date. This is easily better, and more full featured, than similar commercial programs costing in the hundreds of dollars. Also, sMovie - a full featured video text titler similar to ProVideo, Broadcast Titler. Great video scrolling, wipes, special effects, and more...
WB54: Printing - This disk contains several routines to help with the chore of printing. Includes Gothic - Finally a Banner printer for the PD! PrintStudio -a well implemented all-purpose printer-utility with a very comfortable graphic interface and many advanced features, Lila - with ease, print ASCII files to a PostScript printer, and more.
WB55: Application - XCopyIII - a full featured disk copier, make backups of copy protected disks. RoadRoute - find the quickest route from one city to another, highway description included. Diary - a diary program like "Dougy Houser M.D", Cal - a calendar program, Magman - a database tailored for articles and publications.
WB57: Animation - This disk has several "Demo" style animations, Including, Blitter, Lolly, Sun5, vertigo, vortex, and xenomorph.
WB62: Midi Utilities - Several useful midi utilities including, programs to transfer to and from several music programs to midi, a midi sysex handler, a midi recorder with timebase, display midi info, file sequence player, and a few scores.
WB63: Disk Utilities #3 - Several highly recommended programs to aid in removing duplicate files from your hard drive, performing file backups, Binary editing, fast formatting, file recovery, and forced disk validation of corrupt disks.
WB66: Icons #2- Lot's of neat icons. Also, several wonderful programs that to let you create your own icons, modify and manipulate icons and info structures.
WB69: Music - 90 minutes of classical and modern electronic music for you Amiga.
WB75: Music - over 100 instruments files (.inst) and sample sound files (.ss)
WB79: Home & Business Accounting - Includes Ckbacct - the most complete checkbook accounting program going, LCDCalc - this well done calculator has a very large display and operates from the keyboard or mouse, Mileage master - monitor your automobile mileage with this mileage log, Grammar - a grammar checker, and Worldtime - find out what time it is in up to 50 global cities.

WB119ABCDE: Font Set This collection contains over 100 typefaces for use with Professional Page/PageSetter 3+ or PageStream 2.1+. These fonts will output to any laser printer or dot-matrix printer with no jaggies, thanks to outline fonts. Very pro-looking. *5 disk set, counts as 4.*

WB81: Great Applications - DataEasy a very easy to use, database program. Don't let the ease of use fool you, this is a very full featured database program including full printer control for address labels and mail merge applications. Also includes, TypeTut a good typing tutor, RLC a full featured label printer, Banner, a multi-font banner maker, and Budget a home accounting in a program. Highly recommended.
WB82: Animations - Four full length, well done "movie" style animations. Including, Coyote, JugglerII, GhostPool, & Mechanix. 2 disks, counts as 1.
WB93: Workbench 1.3 Extras #2 Contains the utilities that Commodore should have shipped with the Amiga; VirusX4.0, Snap, FixDisk (recover corrupt/deleted files), Disk Optimizer (floppy & hard), MachIII (screen blanker, hotkey, mouse accel., macro, clock utility), GOMF (a guruBuster)and PrintStudio.
WB95: Checkbook Accountant 2.1 - Definitely commercial grade; we've seen many checkbook programs and this is the best. Full budgeting, transaction recording & report generation.
WB96: Dupers - Contains Xcopylll & Nib which will backup copy-protected programs. FreeCopy removes copy protection from several programs, and SuperDuper will crank-out fast AmigaDOS copies.
WB99: Lifestyles - Includes AGene—family tree program that tracks up to 600 people/marriages/etc. Landscape is a CAD program to create gardens/landscapes. Loom simulates an 8 harness loom; experiment with pattern design with instant feedback.
WB102: Telecommunications - Contains the programs NComm 2.0 and VT100-29B. Zmodem protocols, XPR protocol support, full VT100 emulation. NComm's script language is so powerful it can create a full-featured BBS system.
WB106: Home Manager - This is a great all-in-one address book with an autodialer/notepad/to-do list/appointment scheduler/home inventory database and phone number dialer.
WB108: OctaMED - This breakthrough program doubles your Amiga's sound capabilities from 4 channels to an ear-popping 8 channels! All the renound editing capabilities of MED plus 4 more channels! If you thought your Amiga sounded good before...you aint heard nuthin' yet!
WB109: VerseWise - Display, search and print The New Testament.
WB113: Sid II - Why pay 40 bucks for a directory utility, when this one will do it all plus much more! A truly professional-caliber program. Sid 1 was our best, now *completely* rewritten. Sid 2 will astound you.
WB114: Fonts #4 - Contains 36 bitmap system fonts.
WB115: Telecommunication - If you have AmigaDOS 2.04+ and a modem, then this is *THE* program for you. Term *totally* conforms to the User Interface Style Guide for 2.04, has an ARexx port, and supports all popular file-transfer protocols through XPR libraries. We wish all programs were this good.
WB116: Databases - This is what you've been waiting for! Contains 5 uniquely specialized database programs for tracking: Videotapes, CD's, Magazine Articles, Comic Books and Trading Cards!
WB120: Grinder - a complete graphics conversion package that supports GIF's, JPeg, Neochrome, Degas, PCX, Targa, TIFF, HAM-E and IFF format pictures. An invaluable tool for all desktop-videographers and desktop publishers.

WB118: Amiga Beginner - *You asked for it!* A complete tutorial for the beginner on using the Amiga. Starts you off at the power-switch and takes you through to the CLI/Shell and all points in between. *Bonus!* Also included are 16-color icons to replace *every* icon in your 2.0+ Workbench.

WB121: ProPage3/4 Enhancer - This disk contains over 40 "Genies" for use with ProPage 3+, including useful ones like Make Pie Chart and Resize Text to fit Box to name a few. Also includes structured & bitmap clipart for unique borders...a *must have* for all PPage 3 users.
WB122: System Optimizer - KCommodity enhances your system, gives memory meters, mouse/keyboard enhancements, online timers plus *many* others...too numerous to list! REorg will optimize hard and floppy-disks for a big speed increase. HDMem will allow you to use up to 2 megs of hard-drive space for virtual memory! (Req. 68020+ w/MMU) All programs require 2.0+.
WB123AB: Flags of the World - same as WB124, but for Workbench 1.3. Req. 1MB. 2 disk set, counts as two.
WB124: Flags of the World - Two modes: click and learn or a game to test your knowledge. Great graphics--fantastic learning tool. Has current Russia & Yugoslavia republics. Req. Workbench 2.0+ & 1MB RAM.
WB127: Blankers - Over 20 different screen blankers. Most run on Workbench 1.3+...a few require 2.0+
WB128: ColorFonts - contains 12 color bitmap fonts for use with DPaint or any software that supports ColorFonts.
WB129: Super Virus Killer - From Safe Hex Int'l, who catalogs and kills Amiga Viruses *worldwide*--a complete virus system that knows all Amiga viruses...updated often. Req. WB 2+

DEV DISKS

DD54: Compression - This disk is loaded with all of the best file compression programs and aids for the Amiga. Many of the programs can be used by the new user. Includes Arc, Lharc, Lhwarp, Pkax, PowerPacker a must have by all, Zip, Warp, and Zoo.
DD71AB: C Compiler - This disk contains DICE, Matthew Dillon's full featured, powerful C compiler & environment. 2 disks, counts as 2.
DD86: The Programmer - Includes GadTools and REQTools which will allow you to create your user interfaces and then the program will automatically generate "C" source code or Assembly-code. Requires, and writes code for, AmigaDOS2+.
DD89: UEdit - Probably *the* most powerful text editor ever written for the Amiga. Previously commercial, now public domain. Req. 1 MB.
DD91: ParBench - Allows you to easily connect/network two Amigas/CDTVs together and share storage devices. Req's custom cable (docs to make cable included--easy).
DD90: Advanced Utilities - CompressDisk doubles the capacity of your hard-drive on the fly with compression!!! Also contains: disk optimizer, SCSI mount utility, Keymap editors, Enforcer, Undeleter & more. Most programs require 2.0+.

VIDEO DISKS

VO9: Imaging - Included on this disk are the indispensible utilities, Rend24, ViewTek and the JPEG utilities. Rend24 is invaluable for 24-bit animators allowing for previews on AGA and non-AGA Amigas. ViewTek plays back anims of all sorts including Anim 5, 7 and 8 formats. JPEG utilities facilitate the transforming of IFFs into space-saving JPEG format.

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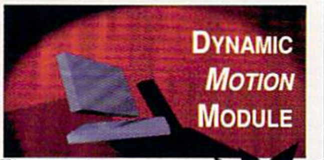
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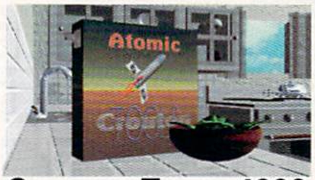
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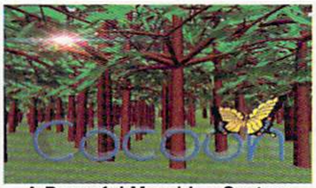


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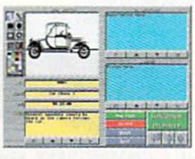
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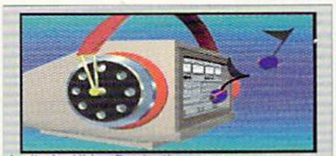
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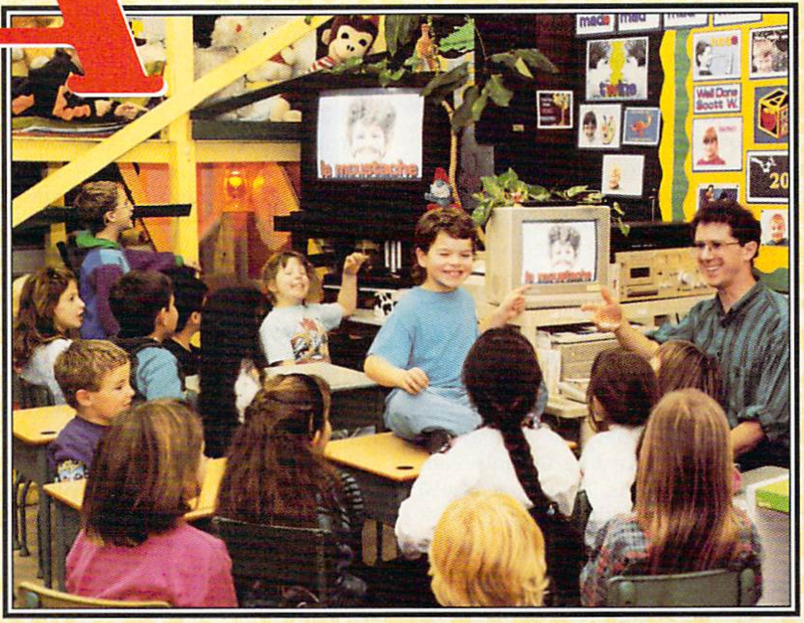
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AW Shucks!

In the Feb. '94 issue, we printed the incorrect address for ***Beyond Entertainment***. The correct address is PO Box 81, Glendale, AZ 85301; phone 800/887-9775.

A Class Act



We're well aware of the Amiga's role in graphics and video classes in high schools and colleges across the country. But the Amiga is also found in less common applications areas—all the way from primary to medical school.

THE AMIGA IS a world-class videographics tool—and, thanks to the excellent efforts of any number of high-profile animators and filmmakers, there's no shortage of examples demonstrating that capability. But toiling quietly in classrooms at all levels of the educational system, far from the glare of the camera, many teachers are using the Amiga for another of its many talents: superb multimedia instruction.

The Amiga's educational potential is being realized in many different ways in elementary and secondary schools across the country, in both broad-ranging and specialty applications. This article focuses on four schools. The methods and applications developed by the educators profiled here are as varied as the settings in which they teach. But their common ground is the inspired use of the Amiga—albeit with a twist on "traditional" Amiga curricula.

The Excitement Is Catching: Stevenson-Britannia School

Doug Hallstead, a second-grade teacher at Stevenson-Britannia School in Winnepeg, Manitoba, is the winner of Canada's Northern Telecom National award for helping his students prepare for an increasingly competitive global marketplace. Hallstead, who formerly taught English literature at the college level, won the award based on his use of the Amiga to better reach his "Nintendo generation" students.

Hallstead's interactive approach, which he calls "the Magic Blackboard," employs an A2000 hooked up to a 28-inch monitor. He and his students work together to create lessons. Hallstead uses DeluxePaint to demonstrate the principles of spelling and phonics. The children watch and participate as words are transformed by simple letter substitution. The changes become more obvious through the use of animation.

For one of the most popular activities, a French lesson, Hallstead uses Framegrabber to digitize the faces of all the students in the class. The children learn the French names for parts of the face, which he picks up and places on a spare DPaint page. The children then choose facial features by their French names, and debate whether the item should be "plus petite" or "plus grande" as Hallstead places it on the digitized face. (See the opening photograph, where student A.J. Schultz's face becomes the focus of a lesson.) The ►

By Michael Hanish

resulting caricature or animation—subtle or outrageous—is printed or dumped to videotape for the "subject" to take home. In the city of Winnepeg, which has the highest child poverty rate in all of Canada, few students have computers at home, but most have VCRs.

According to Hallstead, the students so enjoy seeing their ideas "dignified" by the computer that they will often ask to go back to a previous lesson. "Imagine students asking to review spelling!" he exclaims.

These simple yet direct methods excite and involve the children without sacrificing academic content to flashy form. The main thing that makes the Magic Blackboard a success, however, is the collective imagination of the students and teacher. One activity suggests another, and as students interact to create simple animations and music, they are taking large steps toward controlling their own education.

"Now more teachers want to get on board," says Hallstead, who serves as the school's computer facilitator, "because they have seen what [the Amiga] can do." This is perfect because, according to Hallstead, the school is underusing its Amigas. "The [machine's] potential," he notes, "is just out of this world."

VERY VISUAL: ST. FRANCIS DE SALES SCHOOL FOR THE DEAF

Brooklyn is home to New York State's largest elementary school for the deaf. Here, 224 children, from infancy to age 14, receive a comprehensive academic and practical education, using both traditional and computer-assisted methods. Until 1991, the school had



In producing commercials for their school store, St. Francis students learn a wide range of skills.

the usual assortment of computers: IBMs in the business office and Macs and Apple IIs in the computer lab running educational, paint, and print-shop software. That year, Stan Piesla, an administrator and coordinator of the Futures Program (an in-school work/study program providing students with practical uses for their academic skills), took other administrators to see a demonstration of the Video Toaster. Fifteen minutes later they were convinced of its potential, and St. Francis de Sales School was on the waiting list for a Toaster system.

Less than seven weeks after the arrival of the Toaster, Piesla and Media Department members Clairmarie McGrath and Susan Elsert produced a demo video to show the staff some of the system's capabilities. Within 20 weeks, they began a daily *Morning Visual Announcements* program, broadcast on the school's closed-circuit television system. Last fall marked the second anniversary of the program—a total of more than 360 shows.

Produced by the staff and students of the Media Department, the program offers several regular segments repeated three times daily—announcements, the Pledge of Allegiance, birthdays, special events, and *This Day in History*—all presented visually so that sign-language interpretation is unnecessary. The Pledge, for example, is signed by a student's gloved hands (with voice-over for the hearing crowd). "Prior to this, announcements were made, as in many schools, over an audio public-address system," says Piesla. "Quite ineffective, don't you think, in a school where there are deaf children and staff members?"

In the summer of 1982, Piesla teamed up with Maria Hartman, a teacher in the Upper Department at St. Francis, to involve students in making commercials for the school store. As a work/study project, students run the store and do a wild business selling a variety of items. Students got involved in all phases of advertising: conception, planning, scripting, acting, shooting, editing, and post-production. And before they actually produced the commercials, the youngsters studied how ads work; in addition to critical viewing, they worked on language and writing, social skills, and acting. In the past year, the kids created more than 40 commercials, all shown on the school's *Morning Visual Announcements* program. Plus, they completed several longer projects, including a 20-minute video dealing with environmental issues.

Then a little over a year ago, Commodore sent an A3000 to St. Francis for evaluation in nontraditional classroom applications. The students in Maria Hartman's courses have put the machine to use in several multidisciplinary activities—among them keeping, illustrating, and printing journals with the help of Pelican Press (Toucan Software), Scala (Scala Inc.), and a word processor.

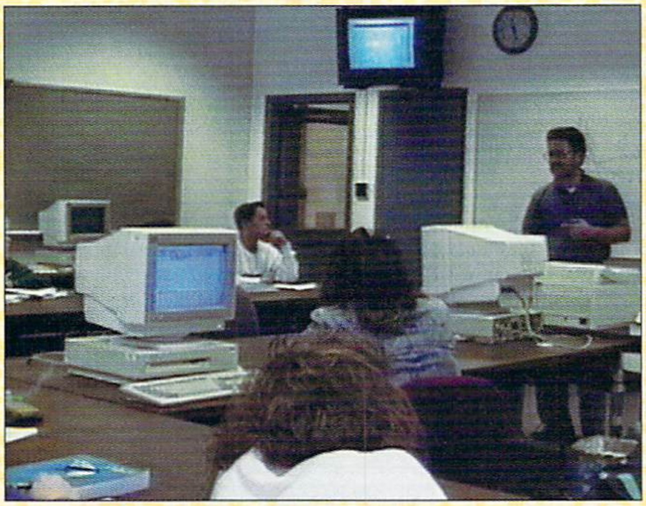
"I would never have envisioned that a computer-based television system would bring out such creativity in our students — and in a way they seem to be thoroughly enjoying and in which they are showing such competence," says Piesla. That sort of delight and enthusiasm for learning has to be contagious.

CONCEPTUALLY CORRECT: COLLEGE OF ST. ROSE

Who says math and physics are dull? At the College of St. Rose in Albany, New York, these subjects come to life with the help of Amigas. Part of the institution's recent growth is a new science building, which houses more than 30 Amigas. Here, the inspired use of these machines was enough to capture the imagination of a confirmed mathphobe (me).

Carmen Artino is the driving force behind Amigas in the math department. In his class, 20 A3000s are arranged in a horseshoe around the edges of the classroom. The students sit in swivel chairs facing the teacher, with their backs to the computers; they

simply swing around when they need to use the machines. The teacher's station, at the front of the room, includes an A3000T and monitor connected to two huge Mitsubishi multiscan monitors hung from the ceiling. This arrangement is highly functional and reflects the school's philosophy concerning the



Amigas are thoroughly and appropriately integrated into the math and physics curriculum at the College of St. Rose.

computer's role in the classroom: It is a tool to aid, not come between, instructors and students.

Each semester, 100 to 150 students study calculus, algebra, linear algebra, probability, and analysis (a statistics course is in the planning stages), mainly using Maple V (Waterloo Maple Software). According to Artino, "the program knows lots of math!" Using it takes away the purely manipulative focus of math work, letting students concentrate on concepts. For visualization purposes, Artino has been developing a linked version of MathVision (Seven Seas Software) with HyperBook (Gold Disk) and ARexx.

Nearby, in Kevin Gannon's physics lab, students also use Maple V—along with Voyager, Distant Suns, and Vista Pro (Virtual Reality Labs), plus some public-domain software gems: Periodic Table, ProjMot, and RangeFinder. Students can move planets and fire projectiles in computer memory. Not only can they perform experiments for a fraction of the cost of using traditional test and demonstration equipment, but they can also participate in activities that would be impossible otherwise. And in addition to offering superior simulation and visualization, the Amigas provide Gannon with feedback on how well his students are comprehending the material.

A Course with Spine: Philadelphia College of Osteopathic Medicine

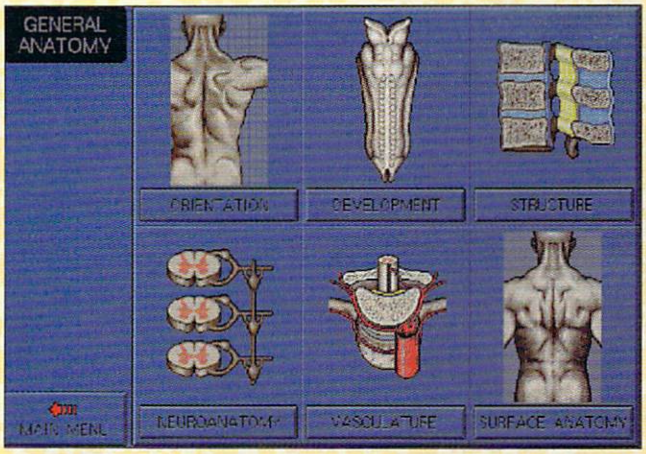
In the year and a half since its completion, The Dynamic Spine, an interactive teaching course on the Amiga, has found a home at two chiropractic colleges, three schools of osteopathic medicine, and the National Library of Medicine at the National Institutes of Health. Besides that, it has won numerous awards for design and programming excellence.

This application, easily the finest example of instructional interactive multimedia I have seen, is the brainchild of Dr. Patrick Coughlin of the Philadelphia College of Osteopathic Medicine. While Coughlin admits that nothing can replace the cadaver for teaching medicine, The Dynamic Spine does provide a splendid supplement to traditional instruction.

The purpose of the project is to give students of chiropractic, osteopathy, physical therapy, and general medicine a detailed, functional understanding of the human spine and its associated soft tissue from a number of viewpoints. It was designed for reference as well as for instruction and training. Text and still images are presented with hypertext links, complemented by 3-D animations of the vertebrae, video sequences of manual medical techniques (shot at various angles), and animated simulations of these techniques. On-line help is available throughout.

Students using The Dynamic Spine can access two-dimensional views of all the bones of the human body in atlas-type format and scroll through text descriptions. They can also call up a wide variety of x-ray images. What's more, students can even perform on-screen dissection.

The Dynamic Spine's presentation system consists of an Amiga 3000, monitors, and a laser-disc player. The program's interface, so clear and elegant that even inexperienced computer users can navigate with ease, is the work of Mark Hysell. Hysell is also responsible for the 3-D vertebrae animations—some of the most visually and kinetically beautiful screen work I've seen anywhere. He used CanDo (INOVAtronics) to produce the interface and the Video Toaster's LightWave and Modeler (NewTek) for the animations.



The Dynamic Spine makes a complex subject clear and accessible to students at all levels of computer experience.

If you're looking for an example of how to make a complex subject crystal clear, investigate this one. The project is a boon not only to students and multimedia designers—but to the Amiga's image as well.

These four profiles represent just the tip of the iceberg for creative Amiga educational applications. Good tools bring out the best in those who use them. Let us know what *you* do with them! ■

*Michael Hanish uses Amigas for his work in adult literacy. Write to him c/o **AmigaWorld**, Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

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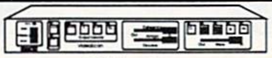
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THE LAST WORD

Kudos, complaints, comments, concerns, and contributions from our readers.

A Higher BBS Software

I feel your review of the Excelsior! BBS in the January '94 issue missed the whole reason for Excelsior!'s existence. Its standard BBS functions—files, messages, doors, Fidonet, and UUCP support—are those offered by any commercial BBS today. But there's more. Excelsior! is based on an "unlimited" philosophy; unlimited applies to message bases, file bases, doors, subdirectories in these areas, nodes (phone lines), messages, files, users, transfer protocols, archiver support, and even unlimited BBSs (do you know of any other Amiga BBS package that easily lends itself to running multiple separate BBS systems on one machine with the same resident code?).

Also, the review failed to mention that you receive free inner-revision upgrades. This "extra" is not the norm for other BBS software that I've run.

Sean Workman
Eugene, OR

Creative Computing

With my Amiga 1200 I do not have to spend huge amounts of money to get great creative work accomplished. The programs are easy to use and install. There are no cards to purchase, nor technical jargon thrown at you. It is just simple, effective computing at a price everyone can afford. I am glad to say that your magazine embodies the creative edge that people like me enjoy to read.

Dennis Perusse
Amesbury, MA

A Hairstyling Tip

I just finished reading the "Head2Head" article in the January issue comparing Final Copy II with ProWrite. I use Final Copy on a daily basis and must agree that it is an excellent word processor and has basic desktop-publishing potential. The quality of its output still amazes me. With my 24-pin printer and the right driver, I can obtain up to 360x360 dpi. Although printing is slow in this mode, it results in beautiful characters with no jagged edges. With my 3MB system, Final Copy runs flawlessly. However, even Softwood admits that it won't run well on a 1MB system. They suggest that you run it on the Workbench screen (not a custom one), clear anything else running in the background, and close all windows behind. My recommendation is that if you have a 1MB system, use the original Final Copy, not the latest upgrade. You lose a few nice features, but the output is still great and you won't pull your hair out in the process.

Ray Macke
Marissa, Illinois

...we could be sitting on the brink of a whole new lease on life for our favorite computer.

Making the Grade

Recently in one of my college classes, my professor divided the class into groups and asked us to do a presentation. I convinced my team that we could use my Amiga 1200 as a slide projector. After reading a few articles, I purchased some public-domain fonts from Northwest Public Domain. Then, I designed each "slide" in DeluxePaint IV, wrote a program in AMOS to display each slide, complete with a slew of fancy transitions, and used Final Copy to type our summary paper. Needless to say, the entire class loved the presentation, especially my professor, who was so impressed he asked us to do our presentation again so that he could videotape it and show it in future classes.

I have never regretted buying my Amiga, and I thank *AmigaWorld* for helping me decide which products to buy and learn how to use them.

Todd C. Reddy
Catlin, Illinois

CD32 Responses

By introducing the Amiga to a new generation of computer users in the form of a high-quality game system, the public's interest should be engaged. CD32 is a more economical alternative to 3DO, and has far superior graphics than a Sega CD or Super Nintendo system. It also has the ability to be a full-fledged home computer.

What better way to show off the Amiga's capabilities than with a game system? Given the proper mix of hype and dealer support, we could be sitting on the brink of a whole new lease on life for our favorite computer.

Sean McLean
Winnipeg, Canada

In response to complaints that "Commodore has taken a huge step back" by introducing the CD32 game console, I have a couple of observations. The C-64 was, by anyone's reckoning, a tremendous success, which was largely fueled by users who purchased the computer to play games. Unfortunately, American game publishers have largely abandoned the Amiga as a game platform (in favor of that notorious game machine, the PC!), and when the CD32 is introduced here, Commodore's marketing genius will ensure its tenure is both brief and unremarkable.

Jeffrey T. Powell
West Covina, CA

Let's hope not, Jeff!—Eds.